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BALANCED
ENVIRONMENTAL

AQUATIC EFFECTS ASSESSMENT

BARGE RAMP RELOCATION PROJECT
STEWART, BRITISH COLUMBIA
DFO # 12-HPAC-PA4-00248 | BALANCED # 5397-R-05.2

October 25, 2012

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SCOPE OF WORK

SUMMARY OF SCOPE

Balanced Environmental Services Inc. (Balanced Environmental) has been secured by Stewart World Port Ltd. (the Proponent) to create an Aquatic Effects Assessment report for presentation to Fisheries and Oceans Canada (DFO) in response to DFO's letter dated August 22, 2012 for the Barge Ramp Relocation Project located in Stewart, British Columbia (Koroluk, 2012a - Appendix 1). The scope of work includes the following:

- the complete foreshore/intertidal fish habitat assessment report for the proposed area,
- the habitat compensation plan, including mitigation measures to offset the loss of fish habitat,
- a monitoring plan that will ensure habitat compensation and mitigation measures function properly,
- additional information and clarification regarding the means of assessment and measures to protect SARA listed species which may use this area, and
- an assessment of fish presence/absence and utilization of this area; including salmonids, eulachon and herring, and any mitigation measures that will minimize or avoid negative impacts to them.

REPORT LIMITATIONS

The intent of this report is to provide technical information related to the proposed project in support of an application by the Proponent for Authorization under the *Fisheries Act*.

The report is considered preliminary until it has been signed by persons with signing authority on behalf of Balanced Environmental. Preliminary reports are for discussion purposes only and may change without notice. All signed reports are released by Balanced Environmental to the company that commissioned the report.

Balanced Environmental reserves the right to amend, clarify, or retract this report at any time without notice if, in the opinion of Balanced Environmental, the report is being misrepresented, or if Balanced Environmental becomes aware of any conflicts with the code of ethics, municipal, provincial or federal legislation, or is required to do so by law.

Balanced Environmental is not permitted to discuss the particulars regarding this report to any 3rd party without the consent of the commissioner of the report unless required to do so by law. Please contact the commissioner of the report to obtain approval to discuss this with Balanced Environmental.

This report represents the opinion of Balanced Environmental not the individuals identified in the report. This report does not constitute approval under any municipal, provincial or federal legislation.

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BARGE RAMP RELOCATION PROJECT
STEWART, BRITISH COLUMBIA

SECTION 1 – INTRODUCTION

1.0 GENERAL

The barge ramp relocation project involves replacement of a failing timber barge ramp located at the end of an the existing Cassiar dock with a new barge ramp to be located in deeper water at the off shore end of a nearby causeway. The causeway is approximately 175m long by 50m wide and the barge ramp is roughly 40m long with 3 sets of pile dolphins necessary for securing barges. The facility will be able to accept barges up to 6,000 dwt ranging in size from from 45m to 85m in length and 15m to 25m in width. Currently there is no operational barge ramp in the area.

The project will require placement of fill in the intertidal with the majority of fill placed between 0m and 2m chart datum. Installation of approximately 24 1067mm diameter steel piles will also be required down to a maximum of -11m chart datum. The project will not require any dredging.

No critical habitat was observed during a biophysical survey of the site by a team of Qualified Environmental Professionals (QEPs). Project impacts are expected to be primarily related to loss of water column. Mitigation measures related to project activities are proposed, including ensuring compliance with Best Management Practices for Pile Driving and following Water Quality Guidelines. Proposed habitat enhancement opportunities are focussed on improving habitat for juvenile coho salmon and associated fish species by constructing 1,865 square metres of new salt marsh habitat.

1.1 PROJECT LOCATION

The project is focused on an existing marine facility located at the head of the Portland Canal in Stewart British Columbia. The legal description of the site is DL7318 Stewart, B.C. and the latitude / longitude of the site is 55.918 N / -129.995W. From Terrace, B.C., drive west to Kitwanga, drive north on highway 37 to the Meziadin Junction, turn left on Highway 37a, drive to the Stewart town site, and drive to the end of Railway St. to reach the existing Cassiar dock. See attached Balanced Drawing 5397-D-01.2 for more information.

1.2 PROJECT JUSTIFICATION

The existing barge ramp is no longer operational. Natural sedimentation and infilling from the Bear River have raised the seabed up to 3m chart datum at the current barge ramp location. The proposed project will relocate the barge ramp to deeper waters at -7m chart datum.

With depths impassable around the existing barge ramp and vehicle size restrictions on bridges leading in to Stewart, the only option for heavy machinery to access Stewart is though grounding barges and running equipment up and down the foreshore, which can result in disruption to marine habitat. Furthermore, the nearby AltaGas Forrest Kerr Project must receive two generators and two stators by December 2012 which can only be accomplished with the completion of a new barge ramp facility. As the equipment cannot cross the Nass River from the south or the Bell Irving River from the north, the Forrest Kerr Project will be unable to complete construction of the facility. Additionally, because the trailers carrying the equipment must bypass the town of Stewart, the only transportation route available requires deep water access off the Cassiar dock in

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Stewart. Without this, the project has absolutely no other way to receive this equipment and complete their construction (Moffat, 2012).

The proposed causeway design incorporates primarily fill material instead of piling. This is required to minimize maintenance requirements, increase design life and make the project economically viable.

1.3 PROJECT SUPPORT

The project has received support from the local businesses (Wyprysky, 2012), the residents of Stewart (Moffat, 2012), Stewart Mayor and Council (Durant, 2012), local MLA (Pimm, 2012), the BC Ministry of Transportation and Infrastructure (Byng, 2012), and many businesses in Stewart's hinterland (Moffat, 2012).

1.4 First Nations

The First Nations Nisga'a Lisims government has been contacted by DFO for comment regarding their interests in the project and project site on August 29 and September 25, 2012 (Appendix 2 - First Nations Correspondance), as yet no reply has been received.

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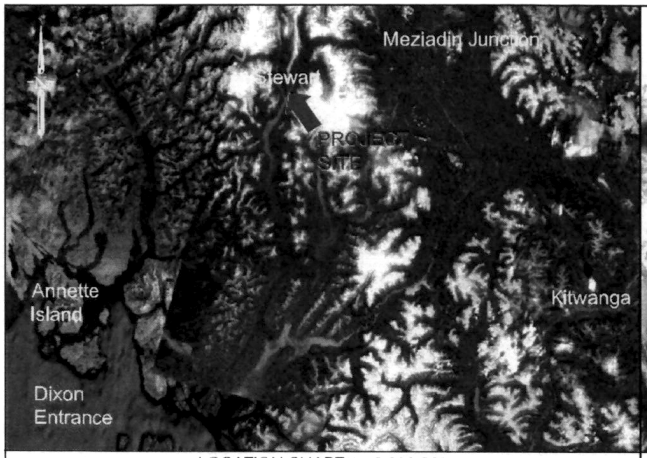
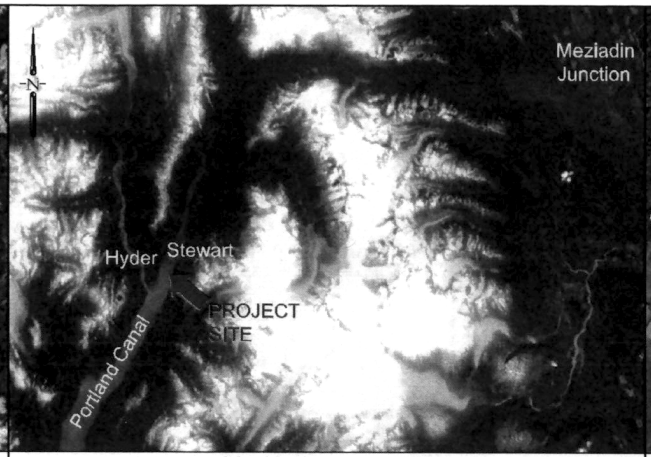
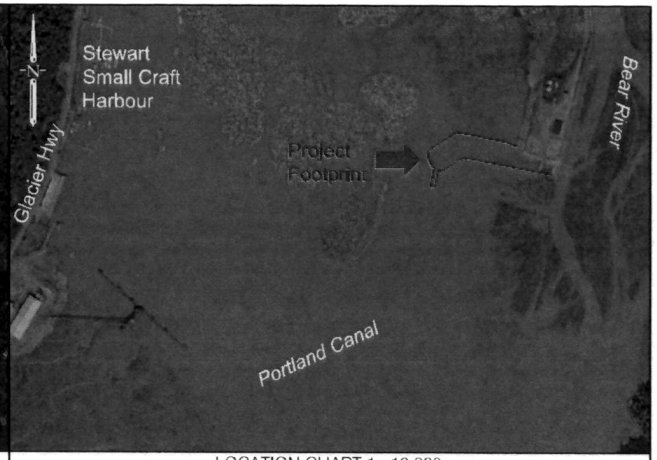


LOCATION CHART 1 : 2,000,000



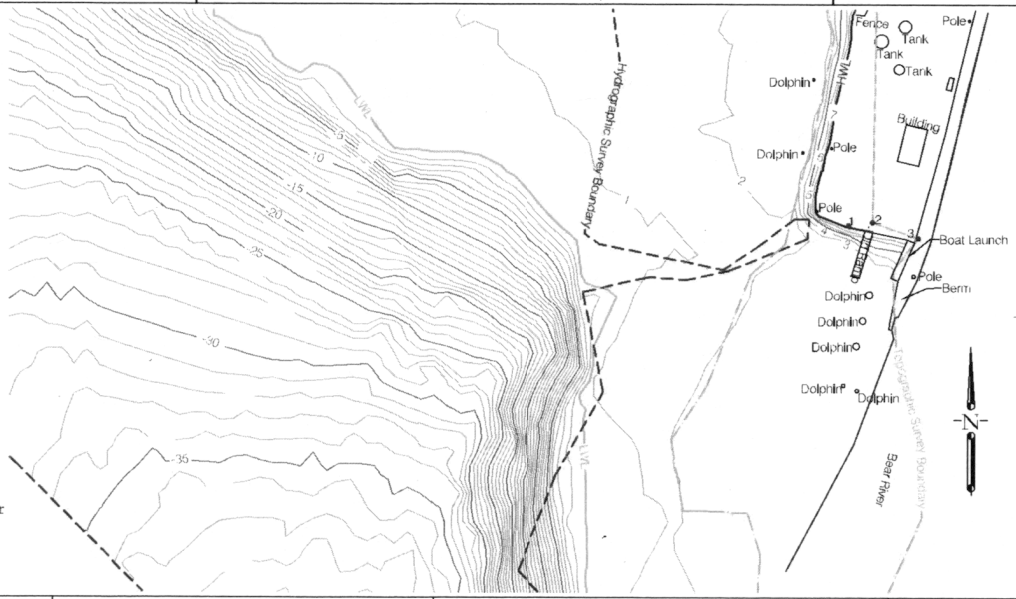
LOCATION CHART 1 : 500,000



LOCATION CHART 1 : 10,000

DRAWING NOTES

- Drawing notes apply to Drawings 5397-D-01.1 and 5397-D-02.1.
- Not an As-Built drawing.
- All elevations are in metres and related to chart datum via the Stewart Harmonic Station (CHS) Tides and Currents Pro v. 3.5.107 accurate to +/- 0.3m.
- Hydrographic, topographic and biophysical surveys were conducted on May 1 and 2, 2012.
- Intertidal biophysical location information was collected using either a total station or dGPS.
- General underwater biophysical information was collected by making a series of dives throughout the survey area. Observations were located relative to existing structures onsite.
- The information, including elevation and biophysical data, presented on the drawings may vary from current conditions due to the passage of time or seasonal changes in substrate and biota.
- The data presented on the drawings represents, in general terms, the substrate and biota types.
- Contour data between the limits of the hydrographic and topographic surveys is extrapolated.
- According to Cambira Gordon 2011, the high water mark for the site is approximately 7.67m chart datum.
- To convert to Geodetic, subtract 3.713 metres.



LEGEND

- Existing Structures
- 1.0m Contour
- 5.0m Contour
- Low Water (LWL) (0m Chart Datum)
- High Water (HWL) (7.67m Contour)
- Hydrographic Survey Boundary
- Topographic Survey Boundary
- 1 Survey Reference Point

SURVEY REFERENCE POINTS

- Reference Point 1
  - Canada Hydrographic Services # 85 79600
  - Tide & Currents: 7.84m Chart Datum
- Reference Point 2
  - Observation Monitoring Well
- Reference Point 3
  - Tide Program: 7.84m Chart Datum
  - BC Legal Survey Monument #2002 SL 7318 WT 4.446 509
  - Tides & Currents: 6.99m Chart Datum

50 0 150
Distance in Metres

Ref. No.	REFERENCE

Client
ARCTIC CONSTRUCTION
11421 Alaska Road
Fort St. John, BC
V1J 6N2

Author
BALANCED ENVIRONMENTAL

Checked by	WA
Drawn by	DC
Date	July 11, 2012
Scale	1:3500
Inspectors	WA,DC, KF
Paper	11 x 17

PROJECT
LOCATION MAP
BARGE RAMP RELOCATION PROJECT,
STEWART, BRITISH COLUMBIA

DWG. No. 5397-D-01.2

BALANCED ENVIRONMENTAL SERVICES INC.

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SECTION 2 – PROJECT DESCRIPTION

2.0 GENERAL

The barge ramp relocation project involves replacement of a failing timber barge ramp located on the end of an existing Cassiar dock with a new barge ramp located in deeper water at the end of the causeway. The causeway is approximately 175m long by 50m wide and the barge ramp is roughly 40m long with 3 sets of pile dolphins necessary for securing barges. The facility will be able to accept barges up to 6,000 dwt ranging in size from 45m to 85m in length and 15m to 25m in width.

2.1 PROJECT COMPONENTS

The project will include construction of the following components:

A) Causeway Construction
- 175m in length
- 50m wide at the base
- Gravel infill
- Rip-rap sides approximately 1m thick

B) Ramp Abutment and Ramp Construction
- Ramp abutment will be a short trestle consisting of:
  - i. steel pilings - 1067mm
  - ii. precast concrete pile cap - 1,500(W) mm x 1,200(H) mm x 21,600(L) mm
  - iii. precast concrete box stringers - 3,600(W) mm x 800(H) mm x 7,100(L) mm
- Ramp 45m in length

C) Pile Dolphin Installation
- 3 locations as per the attached drawings
- Each dolphin will be comprised of 3 steel piles (2 vertical and 1 horizontal)
- Depth of dolphins range between -4m and -11m chart datum
- Pile size 1067mm
- Total of 9 piles

2.2 MATERIALS

The project will require the following materials:
- Gravel – approximately 60,000 m^3
- Rip-rap – approximately 8,000 m^3
- Steel piles - 24 x 1067mm
- Concrete pile caps - 1,500(W) mm x 1,200(H) mm x 21,600(L) mm
- Concrete box stringers - 3,600(W) mm x 800(H) mm x 7,100(L) mm
- Vehicle ramp

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2.3 METHODOLOGY

The existing causeway will be extended using gravel infill and rip-rap sides. Construction will be accomplished using excavators, dump trucks, and other land based equipment.

Steel piles will be positioned by driving rig following the British Columbia Marine and Pile Driving Contractors Association Best Management Practices as outlined in Section 5 – Mitigation Measures. Piles will be driven using vibration if possible and impact only if necessary.

2.4 TIMELINE

The project will commence immediately after the necessary approvals are in place. Ideally construction will begin October 1st, 2012 and be completed by March 15, 2013. A key milestone for the project is to have the causeway extended to deep water before December 2012 to accommodate the delivery of the AltaGas Forrest Kerr generators and stators.

2.5 GENERAL ARRANGEMENT PLAN

A General Arrangement Plan has been prepared (All-Span, 2012) and involves the following drawings dated April 13, 2012:

- Project 12039 Drawing 1 – Key Plan and Site Plans
- Project 12039 Drawing 2 – General Arrangement
- Project 12039 Drawing 4 – Ramp & Barge Plan and Profile
- Project 12039 Drawing 6 – Misc. Details

While these plans are preliminary in nature they are sufficiently detailed to complete this Aquatic Effects Assessment.

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SITE PLAN
1:2000

PRELIMINARY
FOR DISCUSSION ONLY

KEY PLAN
N.T.S.

ALL-SPAN ENGINEERING & CONSTRUCTION LTD.	CLIENT: STEWART WORLD PORT	H				DATE: 13/04/12
#201 – 7198 VANTAGE WAY, DELTA, B.C. CANADA V4G 1K7		G				SCALE: AS NOTED
E-mail: all-span@telus.net	PROJECT: STEWART BARGE RAMP	F				DRAWN BY: J.P.
PHONE: (604) 940-2212 FAX: (604) 940-1516		E				DESIGN BY: D.L.
		D				CHECKED BY: D.M.
		C				APPROVED
	DRAWING TITLE: KEY PLAN AND SITE PLANS	B				PROJECT No. 12039 REV.
		A				DRAWING No. 1 –
		REV.	DESCRIPTION	DATE	BY	

CAD FILE: 12039-1

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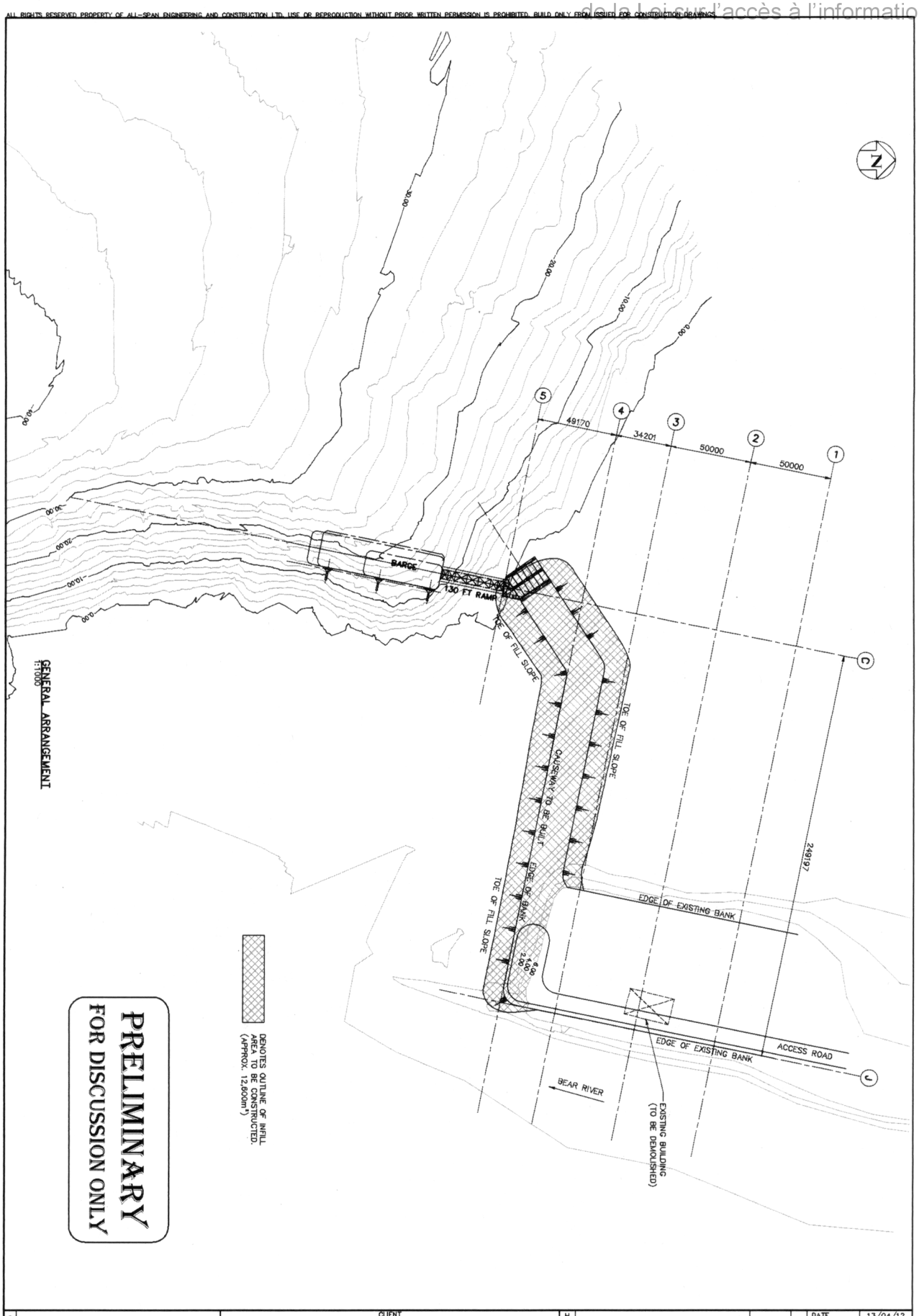

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	E-mail: all-span@telus.net	PROJECT: STEWART BARGE RAMP	F				DRAWN BY J.P.
	PHONE: (604) 940-2212 FAX: (604) 940-1516		E				DESIGN BY D.L.
			D				CHECKED BY D.M.
			C				APPROVED
		DRAWING TITLE: GENERAL ARRANGEMENT	B				PROJECT No. 12039 REV.
			A				DRAWING No. 2 –
			REV.	DESCRIPTION	DATE	BY	

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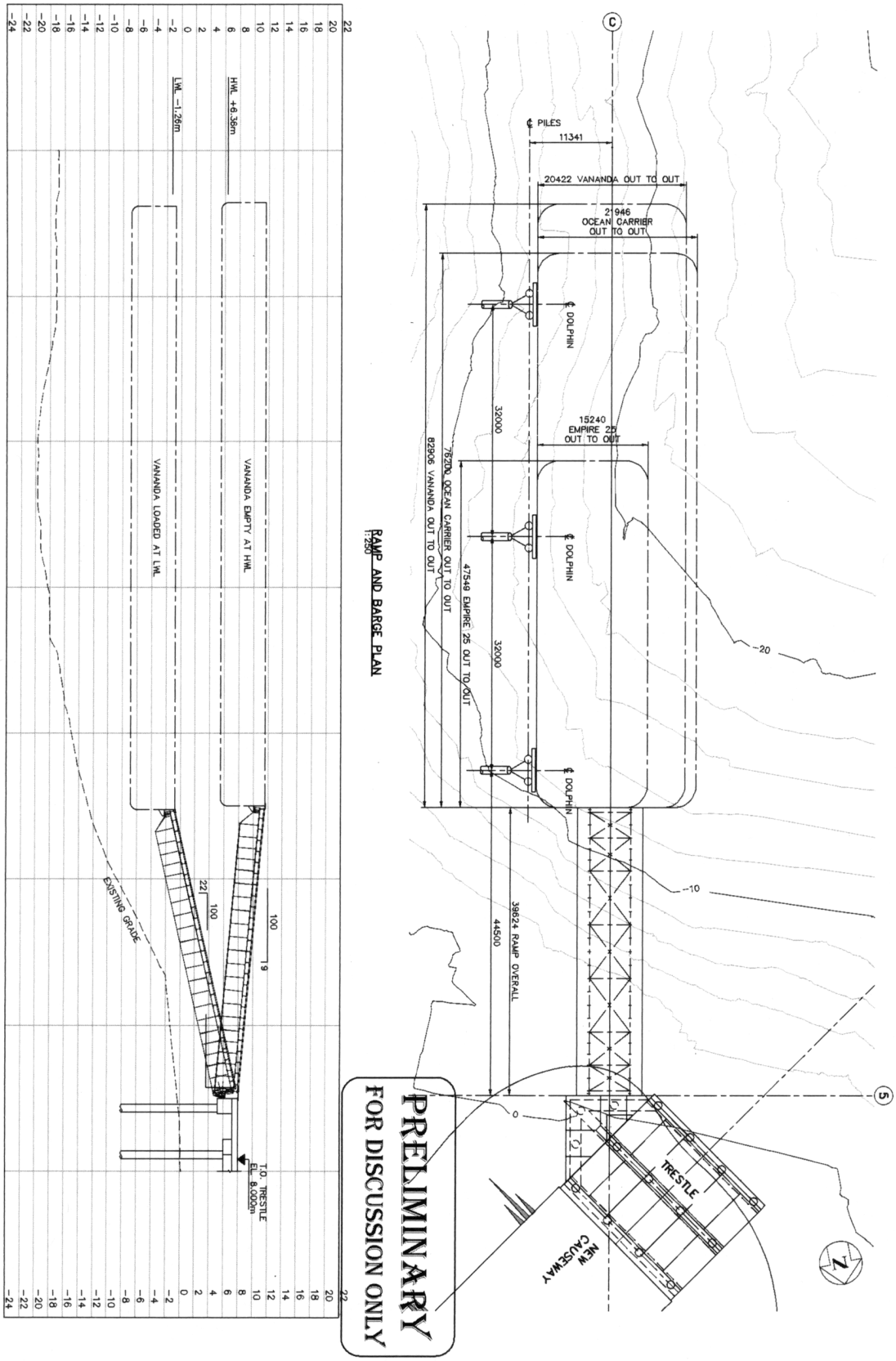

CADFILE: 12039-1	ALL-SPAN ENGINEERING & CONSTRUCTION LTD.	CLIENT: STEWART WORLD PORT	H		DATE: 13/04/12
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	E-mail: all-span@telus.net	DRAWING TITLE: RAMP & BARGE PLAN & PROFILE	F		DRAWN BY: J.P.
	PHONE: (604) 940-2212 FAX: (604) 940-1516		E		DESIGN BY: D.L.
			D		CHECKED BY: D.M.
			C		APPROVED
			B		PROJECT No. 12039 REV.
			A		DRAWING No. 4 –
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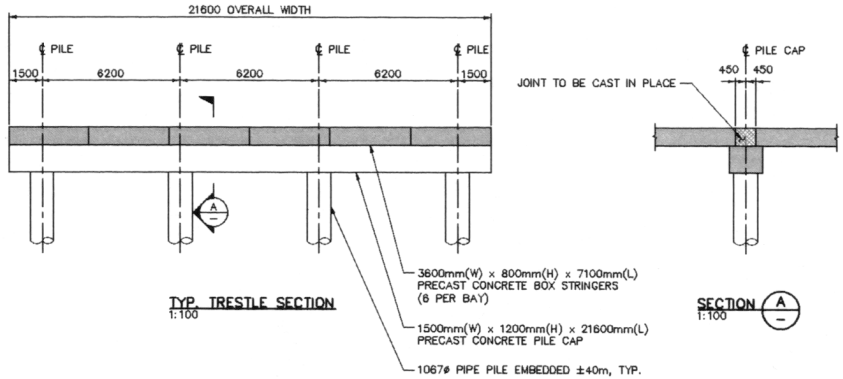

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SECTION A
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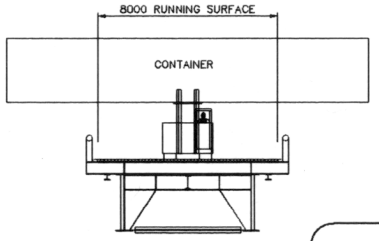

TYP. RAMP SECTION
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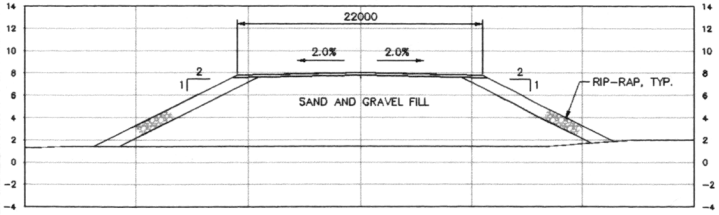

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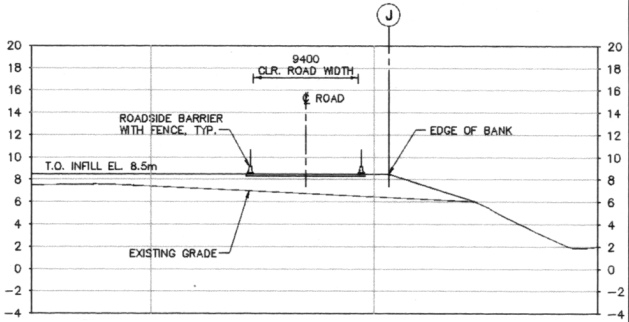

SECTION D/5
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REV.	DESCRIPTION	DATE	BY
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DATE	13/04/12
SCALE	AS NOTED
DRAWN BY	J.P.
DESIGN BY	D.L.
CHECKED BY	D.M.
APPROVED	
PROJECT No.	12039
DRAWING No.	6
REV.	–

CLIENT
STEWART WORLD PORT

PROJECT
STEWART BARGE RAMP

DRAWING TITLE
MISC. DETAILS

ALL-SPAN
ENGINEERING & CONSTRUCTION LTD.
#201 – 7198 VANTAGE WAY
DELTA, B.C. CANADA V4G 1K7
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PHONE: (604) 940-2212 FAX: (604) 940-1516

CADFILE: 12039–1

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SECTION 3 – EXISTING CONDITIONS

3.0 GENERAL

On May 1 and 2, 2012 Balanced performed field inspections to collect above and below water biophysical information (Appleton, 2012a). The above water survey was conducted by a team of biologists (Warren Appleton, Duncan Clark, and Kurt Fehr) and included a general survey of the area from above the high water mark to the low tide at the time of survey (2.0m chart datum). Biophysical information and topographical data was collected using a dGPS and a Total Station.

The below water survey was conducted by a team of WorkSafeBC certified SCUBA QEP divers and involved making general observations on species presence and abundance, as well as mapping the transitions between different substrate types relative to local infrastructure. A hydrographic survey using a Digital Depth Sounder and dGPS was also performed.

Biophysical, bathymetric, and topographic information collected during the field visits are available on the attached Balanced Drawings 5397-D-01.1 (Location Map), 5397-D-02.1 (Biophysical Conditions), and the attached File No. 5397-E-01.1 (Table 1 – Observed Biota) and are summarized below. All elevations are in metres and related to chart datum via the Stewart Harmonic Station (CHS) using Tides and Currents Pro v. 3.5.107.

3.1 PHYSICAL CONDITIONS

The existing causeway is a disturbed site primarily consisting of gravel and deteriorating asphalt with some areas of shallow soil within the vicinity of the tank farm containment area at the north end of the survey area. The edge of the causeway consists of a riprap armoured slope with angular rock ranging from 64mm to 700mm in diameter, with the majority of rock being less than 300mm in diameter. The riprap slope runs from the top of bank (7.4 to 7.8 m chart datum) to an elevation of 3.0m chart datum. At the toe of the riprap slope the substrate transitions to mud with sparse woody debris on the west side of the causeway and to primarily pebble substrate with patches of sand and cobble on the south side of the causeway. The mud substrate extends south to an approximate elevation of 1.0m chart datum where it transitions to pebble, which continues to subtidal depths. A short riprap berm separates a boat launch ramp from the neighbouring Bear River.

3.2 BIOLOGIAL CONDITIONS

All species observed during the biophysical survey are presented in Table 1 – Species List (file number 5397-E-01.2 dated July 11, 2012).

The majority of upland asphalt and gravel habitat was devoid of any vegetation. A narrow 1 to 2 metre fringe of vegetation was present along the top of the riprap slope which consisted of grasses and sparse willow (*Salix sp.*) and Sitka alder (*Alnus crispa ssp. sinuata*) shrubs. A greater variety of vegetation was present at the north end of the survey area within the vicinity of the tank farm containment area, including some trees (cottonwood, hemlock, and Sitka spruce). Dunegrass (*Elymus mollis*) and tufted hairgrass (*Deschampsia cespitosa*) were patchily distributed amongst the riprap at the northwest end of the survey area. Aquatic vegetation was limited to rockweed (*Fucus sp.)* and green alga (*Ulva intestinalis*) which was most abundant on the riprap substrate. Colonial diatoms and green alga were also observed at less than 25% coverage on intertidal pebble. Observed invertebrate species included tanner crabs (*Chionoecetes bairdi*) on subtidal

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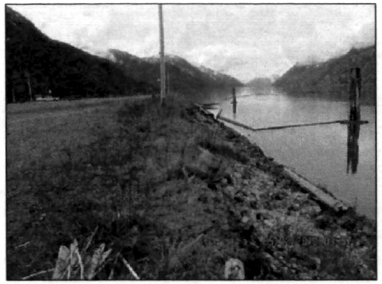


Photo 1. A narrow fringe of grasses and shrubs was present along the top of the causeway's riprap slope.

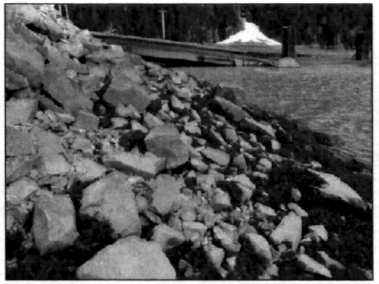


Photo 2. Green algae and rockweed were common on the riprap east of the Bear River.

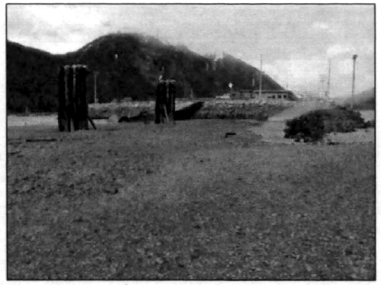


Photo 3. View of riprap slope, berm, and pebble intertidal zone south of the causeway and boat launch.

Photo 4. Close-up of intertidal pebble with less than 25% coverage of green algae and diatoms.

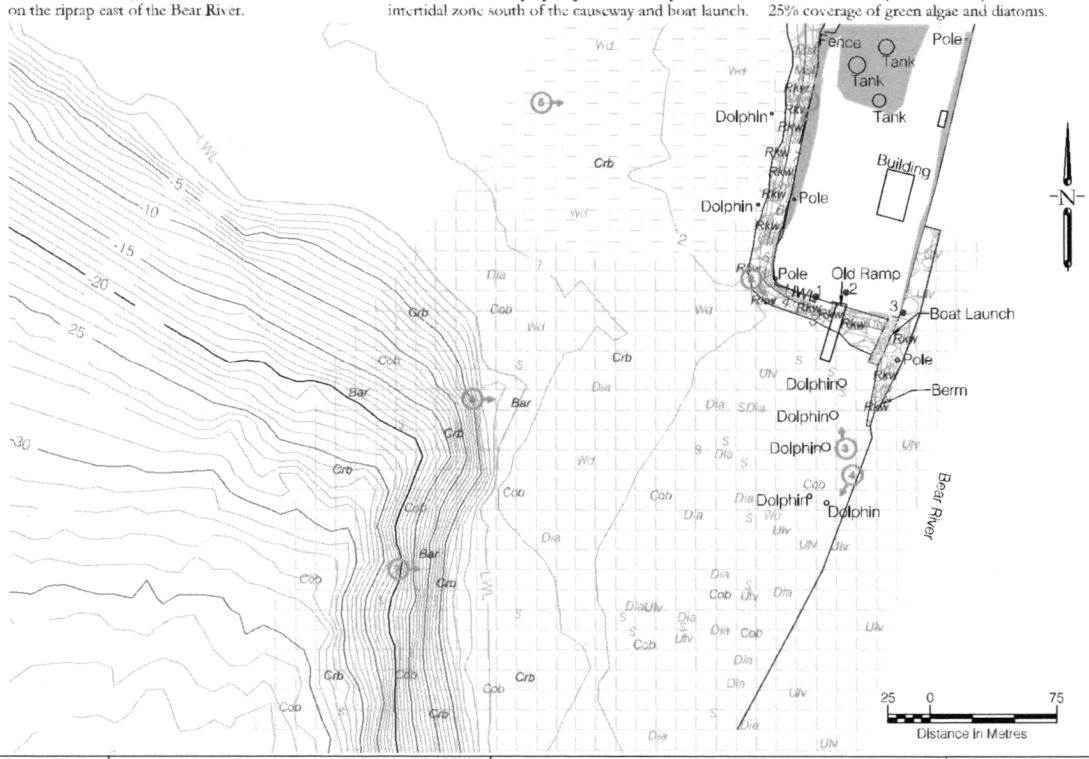
Photo 5. Close-up of intertidal mud substrate.

LEGEND

- Existing Structures
- 1.0m Contour
- 5.0m Contour
- Low Water (LWL) (0m Chart Datum)
- High Water (HWL) (7.67m Contour)
- Riprap (Angular Rock >64mmØ)
- Pebble (2mm to 64mmØ)
- Mud (<0.0625mmØ)
- Cob Cobble (64mm to 255mmØ)
- S Sand (0.0625mm to 2mmØ)
- Wd Woody Debris
- 6 Photo
- Crb Crabs
- Dia Diatoms
- Dune Dunegrass
- Bar Barnacles
- Grasses & Shrubs
- Ulv Green Algae
- Msh Marsh Plants
- Rkw Rockweed
- 1 Reference Point

DRAWING NOTES

- For a complete list of drawing notes, see Drawing 5397-D-01.1 - Location Map.
- Intertidal biophysical information was collected using a total station or dGPS.
- General underwater biophysical information was collected by making a series of dives throughout the survey area. Observations were located relative to existing structures onsite.
- The information, including elevation and biophysical data, presented on the drawings may vary from current conditions due to the passage of time or seasonal changes in substrate and biota.
- The data presented on the drawings represents, in general terms, the substrate and biota types.



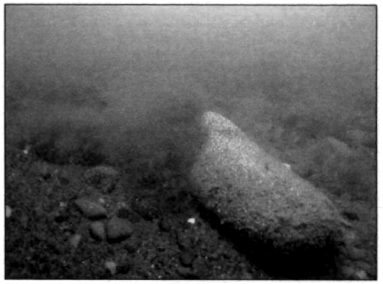


Photo 6. Barnacle spat and diatoms were observed on cobble substrate near the low water line. Pebble substrate was typically bare.

Photo 7. Tanner crab on subtidal pebble substrate with silty sand.

Ref. No.	REFERENCE

Client: ARCTIC CONSTRUCTION, 11421 Alaska Road, Fort St. John, BC, V1J 6N2

Author: BALANCED ENVIRONMENTAL

Checked by	WA
Drawn by	DC
Date	July 11, 2012
Scale	1:2800
Inspectors	WA,KF,DC
Paper	11 x 17

PROJECT: BIOPHYSICAL CONDITIONS BARGE RAMP RELOCATION PROJECT, STEWART, BRITISH COLUMBIA

DWG. No. 5397-D-02.2

BALANCED ENVIRONMENTAL SERVICES INC.

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BALANCED ENVIRONMENTAL

File No. 5397-E-01.2
July 11, 2012

TABLE 1

OBSERVED BIOTA
BARGE RAMP RELOCATION PROJECT
STEWART, BRITISH COLUMBIA

Date of survey: May 1 and 2, 2012

Common Name	Scientific Name	Chart Datum Range (m)		Abundance*	
		Upper	Lower	Description	Method
Barnacles					
Acorn	*Balanus glandula*	1.0	<-20.0	Common	PAC
Brown Alga					
Rockweed	*Fucus gardneri*	4.4	2.3	Common	PAC
Crabs					
Tanner	*Chionoecetes bairdi*	1.0	<-20.0	Sparse	IOT
Diatoms					
Colonial	*Class: Bacillariophyceae*	2.5	0.0	Sparse	PAC
Green Alga					
Green String Lettuce	*Ulva intestinalis*	5.0	2.0	Few	PAC
Marsh Plants					
Dunegrass	*Elymus mollis*	7.5	6.0	Rare	PAC
Seaside Plantain	*Plantago maritima*	4.4	4.4	Rare	PAC
Tufted Hairgrass	*Deschampsia cespitosa*	6.0	4.4	Rare	PAC
Riparian Plants					
Black Cottonwood	*P. balsamifera ssp. trichocarpa*	>7.5	>7.5	Rare	PAC
Blueberry	*Vaccinium sp.*	>7.5	>7.5	Rare	PAC
Grass	*Various spp.*	>7.5	>7.5	Sparse	PAC
Salal	*Gaultheria shallon*	>7.5	>7.5	Rare	PAC
Scouring-rush	*Equisetum hyemale*	>7.5	>7.5	Rare	PAC
Sitka Alder	*A. crispa ssp. sinuata*	>7.5	>7.5	Sparse	PAC
Sitka Spruce	*Picea sitchensis*	>7.5	>7.5	Rare	PAC
Western Hemlock	*Tsuga heterophylla*	>7.5	>7.5	Rare	PAC
Willow	*Salix sp.*	>7.5	>7.5	Sparse	PAC
Thimbleberry	*Rubus parviflorus*	>7.5	>7.5	Rare	PAC

***PAC = Percent Aerial Coverage, IOT = Individuals on Transects**

*Abundance Category	Percent Aerial Coverage (PAC)	Individuals on Transects or Tracklines (IOT)	Individuals per Square Metre (IPM)
Rare	<5%	1	1
Sparse	5-25%	2-4	2-4
Few	26-50%	5-10	5-10
Common	51-75%	11-30	11-30
Abundant	>75%	>30	>30

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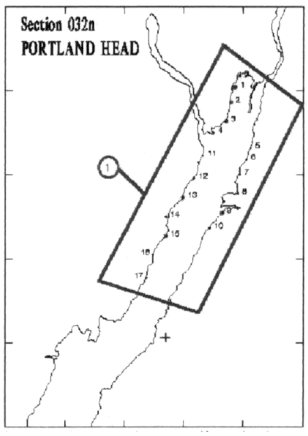
pebble and unidentified shrimp within the intertidal mud habitat. No critical habitat organisms were visible such as eelgrass (*Zostera marina*), kelp (*Laminarians*), pickleweed (*Salicornia spp.)* or sedges (*Carex spp.*). Overall, colonization by visible organisms was sparse.

3.3 FISH PRESENCE AND USAGE



A review of the online Fish Information Summary System database on June 7, 2012 (MOE, 2012 - Appendix 3) stated that the following fish have been observed in the Bear River: Dolly Varden, steelhead, sculpins, Chinook salmon, chum salmon, coho salmon, sockeye salmon, pink salmon, lamprey, longnose dace, mountain whitefish, rainbow trout, and chub. However, local knowledge suggests that the area is primarily coho habitat (Hottot, 2012).

There are existing records that demonstrate that herring spawn near the site (DFO, 2012a - right). Eulachon are present in the Bear River and have been observed near the mouth of the Portland Canal. They only enter freshwater sites for spawning which occurs in the area between February and March prior to the spring freshet; (DFO, 2012b; Francis, 2012; Hay & McCarter, 2000).

No finfish were observed during the biophysical survey (Appleton, 2012a). Visibility during the biophysical survey varied from 0.3m above the low water mark to 3 metres below the low water mark.

3.4 SPECIES AT RISK AND MARINE MAMMALS

On September 5, 2012, both Fisheries and Oceans Canada and Environment Canada were contacted to determine if they were aware of any marine Species at Risk at the site and had any concerns. The following species were identified as potentially being at the site in an email received from DFO on September 17, 2012:

Northern Abalone (*Haliotis kamtschatkana*)

The location of the project does not fall within the critical habitat for northern abalone (SARA, 2012). Furthermore abalone habitat is defined as bedrock and/or boulder substrate with little or no gravel, sand, mud or shell hash present, and with normal marine salinity and good water exchange (Lessard & Campbell, 2007). The existing substrate at the site and low salinity conditions of the estuarine environment make the site generally unsuitable for abalone habitat. The initial biophysical survey revealed that suitable abalone habitat is not present within the project footprint.

Eulachon (*Thaleichthys pacificus*)

The Bear River was assessed as threatened habitat by COSEWIC in may 2011, but is currently being reassessed (Francis, 2012). Very little is known about eulachon in the Bear River; as an anadromous fish, they return from marine to freshwater to reproduce in the early spring; sexually mature fish begin their migration in late summer and fall and spawning occurs in the Nass and Skeena rivers between late February and early March (DFO, 2012b; Hay & McCarter, 2000). Mitigation measures that may be employed are detailed in Section 5.4.

Marine Mammals

There are various marine mammals that might be encountered in the area, harbour seals (*Phoca vitulina*), killer whales (*Orcinus orca*), Steller's sea lions (*Eumetopias jubatus*), harbour porpoise (*Phocoena phocoena*), Pacific white-sided dolphin (*Lagenorhyncus obliquidens*) and river otters (*Lutra canadensis*) are the most likely mammals to be encountered as they are year-round residents and are known to use estuarine environments.

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Only Killer Whales, Steller's Sea Lions, and Harbour Porpoises are established Species at Risk. Grey (*Eschrichtius robustus*) and humpback whales (*Megaptera novaeangliae*) are found in the region and are known to inhabit estuaries, however, during the winter they migrate south to warmer waters, and will therefore not be in the area during the project works. The Sea Otter (*Enhydra lutris*) is a protected species, however, they have a very limited distribution and are not known to be near the project site, furthermore their preferred habitat is not found within the project footprint.

Most of these species are typically observed in waters much deeper than the project footprint and are primarily found in open water. None of these species were observed during the onsite biophysical survey (Appleton, 2012a) and are not expected to be at the site during construction. Monitoring and mitigation measures are detailed in section 7.

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SECTION 4 – IMPACTS

4.0 GENERAL

The proposed relocation of the barge ramp is shown on All-Span's Drawing #12039-2 General Arrangement. The existing barge ramp location has become filled in with aggregate from the Bear River and cannot be used. The proposed new location will allow barges to offload at all tide levels without grounding on the foreshore. The impacts to fish and fish habitat from this work relate to the net loss of intertidal substrate and water column from the proposed fill area.

The proposed fill area has a footprint of approximately 12,517m^2 of which 5,596 m^2 will be raised above the high water mark (7.6m chart datum). The fill area will cover an existing riprap slope, of which approximately 50% (on the lower half) is inhabited by Rockweed and the remaining upper 50% being bare. Offshore of the riprap, in the site formally used for barge loading/unloading, half of the area is primarily a pebble substrate with patches of sand and cobble. This area is mostly devoid of biota with less than 25% coverage by diatoms (*Bacillariophyceae*). To the east, the substrate under the proposed fill area transitions to mud at the boundary with the active booming ground. Mud substrate cover represents less than 10% of the proposed fill area. This area is currently covered by log booms that ground out during periods of low tide and is devoid of any visible organisms. According to a local, the area has been reworked by logging operations and should have an underlying layer of pebbles. Small amounts of woody debris are present.

Post construction, the causeway will have a riprap slope surrounding the facility. The riprap area within the growing range of rockweed (2.3m to 4.4m) is expected to be over 3 times as large as that of the existing causeway that supports rockweed. The fill area is expected to result in a loss of water column of approximately 70,000 m^3. A complete description of the fill area impacts are described below in the Habitat Balance Sheet (Table 2) and are shown on Balanced Drawing 5397-D-07.2.

Table 2. Habitat Balance Sheet (Areas Below the High Water Mark)

Zones	Location	Elevation	Substrate	Indicator Species	Area Before (m^2)	Area After (m^2)	Net Area (m^2)
A	Booming Grounds	Subtidal	Pebble	Crabs	655	0	-655
B	Old Ramp Area	Intertidal	Pebble	Diatoms	9,214	0	-9,214
C	Booming Grounds	Intertidal	Mud	None Visible	1,078	0	-1,078
D	Causeway	Intertidal	Riprap	Rockweed	864	3,810	2,946
E	Causeway	Intertidal	Riprap	None Visible	706	3,111	2,405
Total					**12,517**	**6,921**	**-5,596**

The barge ramp encompasses an area of approximately 337 m^2. There are no photosynthetic organisms within the footprint of these structures. The substrate is entirely subtidal and consists of pebble.

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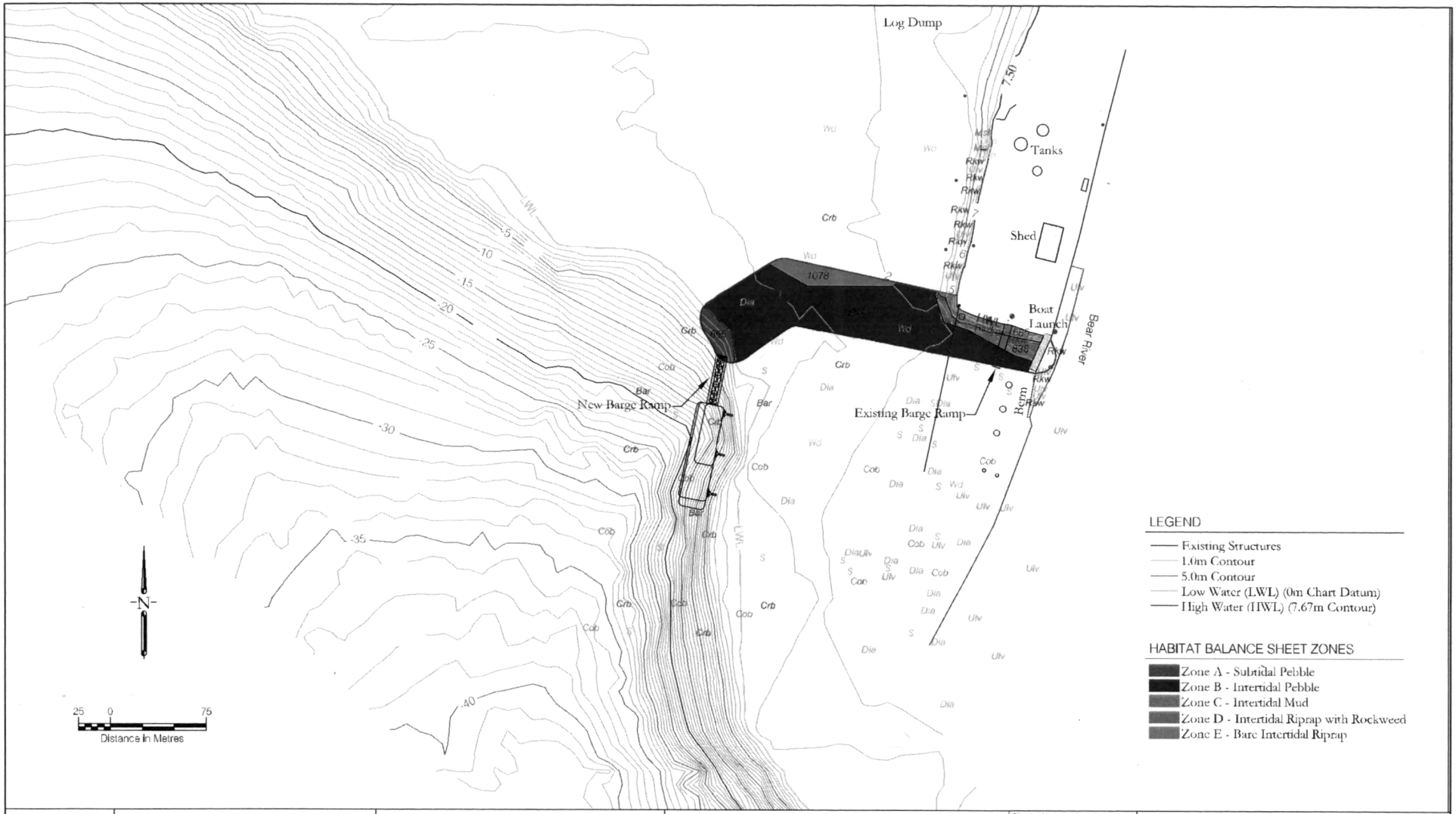

Ref. No.	REFERENCE

Client
ARCTIC CONSTRUCTION
11421 Alaska Road
Fort St. John, BC
V1J 6N2

Author
BALANCED ENVIRONMENTAL

Checked by	XIE
Drawn by	WA
Date	Oct. 25, 2012
Scale	As Shown
Inspectors	WA,KF,DC
Paper	11 x 17

PROJECT
PROJECT IMPACT DRAWING
BARGE RAMP RELOCATION PROJECT,
STEWART, BRITISH COLUMBIA

DWG. No. 5397-D-07.2

BALANCED ENVIRONMENTAL SERVICES INC.

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SECTION 5 – MITIGATION MEASURES

5.0 GENERAL

The proposed works have incorporated mitigation measures throughout all design and construction stages of the project to ensure that fish, fish habitat and species at risk are protected. A more detailed description of mitigation measures is provided below.

5.1 PROJECT DESIGN

The project has undergone several stages of environmental design to mitigate potential impacts to the environment. These have included the following:

- moving the causeway west to reduce the project footprint and avoid filling portions of the Bear River,
- reducing the project footprint from 30,000 m^2 to 19,500 m^2 by choosing a more efficient route to deep water and minimizing the causeway width, and,
- a further in project footprint from 19,500 m^2 to 12,470 m^2 by reducing on-site storage to a minimum.

5.2 CONSTRUCTION OF CAUSEWAY

During construction the following procedures will mitigate several impacts:

- infill will be placed during periods of low tide,
- contractor to have spill management plan in place, including spill kit,
- the Contractor shall inspect equipment to ensure it is in good working order, clean and free of leaks,
- heavy equipment to be kept out of the water,
- heavy equipment to operate within the project footprint only,
- any storage areas will be covered, and,
- minimize fill placement during extreme rainfall events.

5.3 CONSTRUCTION OF PILE STRUCTURES

Impacts related to pile driving will be mitigated by:

- following Best Management Practices for Pile Driving (PDA, 2003 – Appendix 5),
- using a vibratory hammer if driving conditions permit,
- employing a bubble curtain if required,
- capping pile tops to prevent wildlife entrapment, and,
- preventing grounding of barges or equipment on the foreshore.

5.4 IMPACTS TO FISH

Mitigation measures will be employed as deemed necessary by the environmental monitor depending on the presence of fish, phase or type of work, and potential impacts to fish habitat. These decisions will be made on site; mitigation strategies may include, but are not limited to, placement of silt curtains, bubble curtains or stoppage of work. Additional mitigation measures may be required should eulachon be observed on site during construction.

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SECTION 6 – COMPENSATION PLAN

6.0 GENERAL

Projects that involve placement of fill into the marine environment typically are required to provide habitat compensation that supports the affected fish stocks. DFO's preference is typically for construction of "like for like" habitat at the site. If this is not feasible, alternative forms of compensation such as offsite enhancements or alternate forms of compensation may be considered.

DFO has specifically stated that a habitat compensation plan must be provided (Koroluk, 2012a - Appendix 1) and that the use of salt marsh as compensation would have benefit (Koroluk, 2012b – Appendix 1). The section below describes the proposed habitat compensation for the project.

6.1 TARGET SPECIES

High mortality rates of juvenile salmon are observed in estuaries due to several factors, such as food supply, predation and pollution. Species such as coho can spend up to a year before travelling out to sea. During their time in the estuary, they undergo physical adaptations to salt water and feed upon small plankton and insects which can be found along the shoreline - in soils, brackish marsh communities, large woody debris, or falling from riparian vegetation.

6.2 ENHANCEMENT OPTIONS

One possible method for improving coho habitat is to construct additional salt marsh habitat. A large number of species prey on juvenile salmon and salt marshes offer canopy to hide from predators when inundated by tidal waters (Appleton, 2012b). Salt marshes produce detritus, which provides food for bacteria, protozoans, small invertebrates, and clams, which are in turn eaten by larger invertebrates, fish, birds and mammals (Appleton, 2012b). They also have an abundance of insects, which are an important food source for many species including juvenile coho (Appleton, 2012b).

6.3 PROPOSED COMPENSATION

The proposed habitat enhancement involves constructing a habitat bench, which will provide an additional 1,865m^2 area of salt marsh habitat as shown on Balanced Drawings 5397-D-08.2 and 5397-09.1. The work involves the placement of fill in areas of currently devoid of aquatic vegetation. Fill placement is designed to raise the elevation to match elevations of productive marsh habitats in adjacent areas. Construction of the salt marsh bench will include:

- removing sediments from within the footprint of the salt marsh bench using a backhoe and stockpiling them for later use,
- fill will be removed via backhoe and gravel truck from the Bear River under the District of Stewart license of occupation and reclamation permit. Material will be transported to the construction area using a gravel truck and will be placed using a back hoe to achieve the target elevation. Final levelling will be completed with a dozer,
- an impermeable layer will be placed on top of the fill (filter fabric or equivalent),
- previously stockpiled native sediments will be placed as a 0.6m capping layer using a backhoe or dozer,
- a slope stabilization berm will be constructed to protect and contain the fill and sediment layers,

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- the surface of the marsh bench will be sloped to ensure proper drainage and the target marsh elevation will be confirmed with a laser level under the supervision of a qualified biologist to an accuracy of +/- 1cm, and,
- following the construction of the marsh bench, transplanting will be conducted by labourers under the guidance of a qualified biologist to ensure a minimum density of 1 salt marsh plug per square metre.

Additional construction details are available on the attached Balanced Drawings -D-08.2 and 5397-09.1 and a detailed cost estimate is provided in Appendix 6.

6.4 ADDED VALUE ENHANCEMENTS

The project will provide wave protection to 60,000 m^2 of estuary which will improve growing conditions for marsh plants and provide calm waters for juvenile salmon. The side slopes of the causeway that remain riprap will provide at least 1,500 m^2 of rockweed habitat in the mid intertidal zone.

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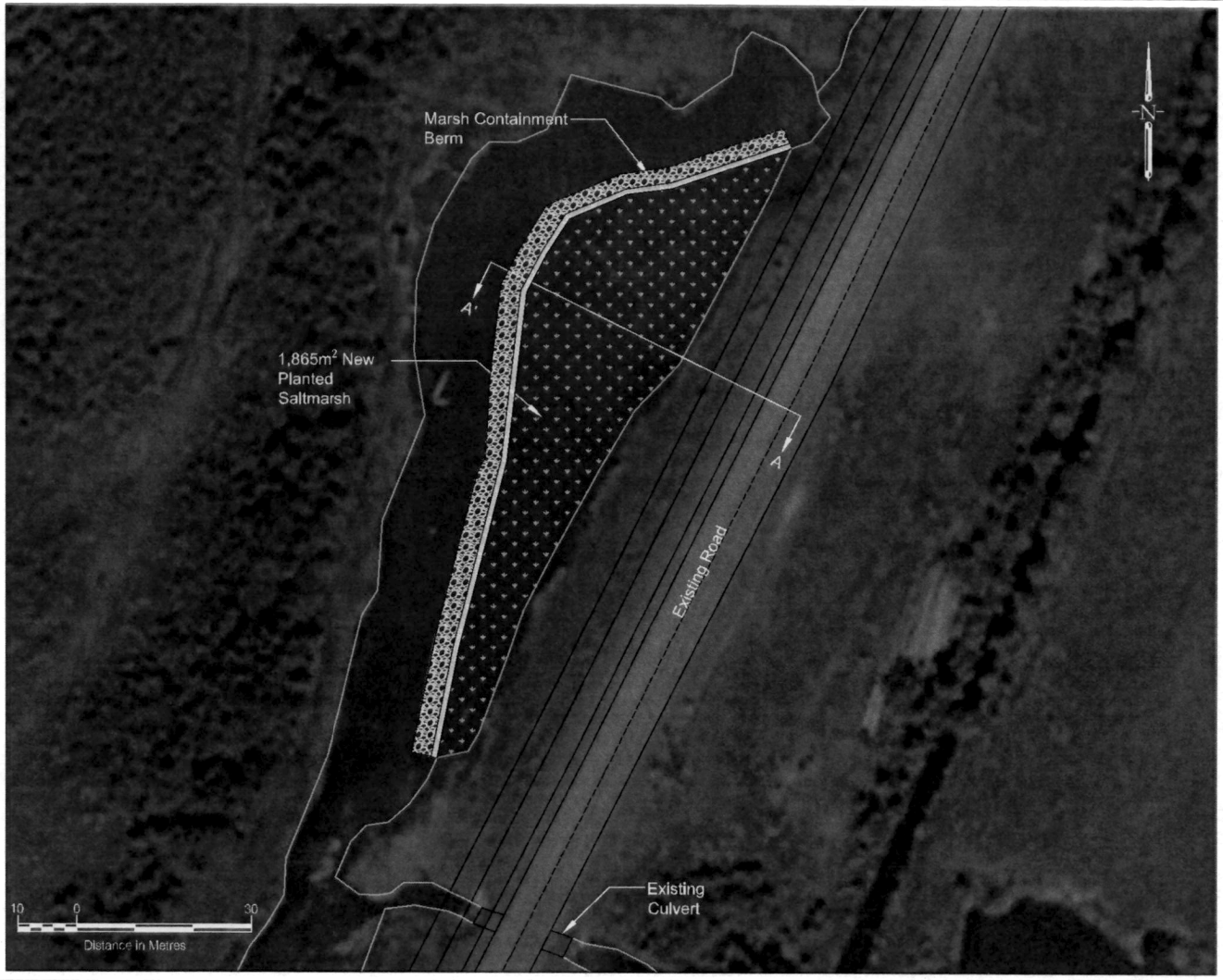
Photo 1. Aerial photo showing location of Saltmarsh Compensation south of 1st Ave. in Stewart, British Columbia.



LEGEND

- —— Existing Structures
- ---- Approximate Centerline of Road Cross Section A-A'
- New Marsh Containment Berm
- New Planted Saltmarsh Habitat

DRAWING NOTES

- Existing conditions have been estimated based on aerial imagery and preliminary on-site observations.
- Actual location and orientation of saltmarsh must be confirmed by a qualified environmental consultant prior to construction.
- Actual elevation of saltmarsh bench must be confirmed by a qualified environmental consultant to an accuracy of +/- 1 cm prior to construction.
- The constructed area of new saltmarsh must be at least 1,865m² in size and must be planted at a minimum density of 1 saltmarsh plug per square meter.
- See Balanced Drawing 5397-D-09.1 Typical Marsh Cross Section for Details.

Ref. No.	REFERENCE

Client
ARCTIC CONSTRUCTION
11421 Alaska Road
Fort St. John, BC
V1J 6N2

Author
BALANCED ENVIRONMENTAL

Checked by	XIE
Drawn by	DC
Date	Oct. 24, 2012
Scale	1:750
Inspectors	-
Paper	11 x 17

PROJECT
SALTMARSH ENHANCEMENT PLANVIEW
HABITAT COMPENSATION
BARGE RAMP RELOCATION PROJECT
STEWART, BRITISH COLUMBIA

DWG. No. 5397-D-08.2

BALANCED ENVIRONMENTAL SERVICES INC.

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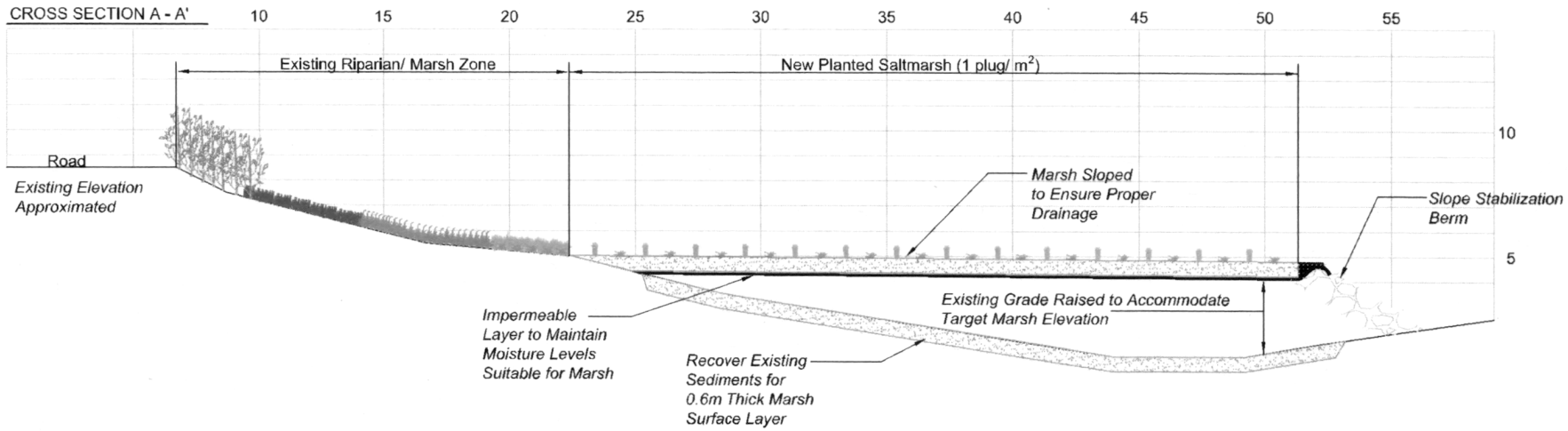

LEGEND

- Existing Structures
- Impermeable Layer
- Slope Stabilization Berm
- Existing Sediments Recovered and Placed on Surface of Marsh Bench
- Saltmarsh Species

DRAWING NOTES

- Existing conditions have been estimated based on aerial imagery and preliminary on-site observations.
- Drawing elevations are in metres and have been approximated.
- Actual location and orientation of saltmarsh must be confirmed by a qualified environmental consultant prior to construction.
- Actual elevation of saltmarsh bench must be confirmed by a qualified environmental consultant to an accuracy of +/- 1 cm prior to construction.
- The constructed area of new saltmarsh must be at least 1,865m^2 in size and must be planted at a minimum density of 1 saltmarsh plug per square meter.
- See Balanced Drawing 5397-D-08.2 for plan view details.

MARSH NOTES

- New marsh elevation to be designed to match existing mean marsh elevation.
- Any marsh plants impacted by construction to be recovered and re-planted.

Ref. No.	REFERENCE

Client: ARCTIC CONSTRUCTION
11421 Alaska Road
Fort St. John, BC
V1J 6N2

Author: BALANCED ENVIRONMENTAL

Checked by	XIE
Drawn by	DC
Date	Oct. 24, 2012
Scale	1:750
Inspectors	-
Paper	11 x 17

PROJECT: SALTMARSH ENHANCEMENT CROSS SECTION HABITAT COMPENSATION BARGE RAMP RELOCATION PROJECT STEWART, BRITISH COLUMBIA

DWG. No. 5397-D-09.1

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SECTION 7 – MONITORING PLAN

7.0 GENERAL

A monitoring plan is typically required to ensure that the project is executed as per any regulatory requirements as it moves through its' various phases including site preparation, construction, project completion and post construction. The following section describes the proposed monitoring plan for the project.

7.1 SITE PREPARATION

An environmental monitor, acceptable to DFO, shall have a pre-construction meeting with the project crews prior to performing any works within 15 metres above the high water mark or any intertidal or subtidal works. The environmental monitor shall review with the onsite crews the environmental practices, expectations and requirements of the project and answer any questions.

7.2 CONSTRUCTION OF CAUSEWAY AND HABITAT COMPENSATION

An environmental monitor shall be onsite during construction activities when there is potential for serious adverse effects to fish or fish habitat. The environmental monitor shall be onsite for a minimum of 1 full day for each type of work activity. The environmental monitor shall remain onsite until the contractor has demonstrated that work activities are being performed in compliance with regulatory requirements. Monitoring reports, field notes, photographs and records shall be collected and kept on file.

7.3 CONSTRUCTION OF PILE STRUCTURES

Monitoring of pile driving activities will only be performed if the use of an impact hammer is required. The acceptable threshold for pressure waves is 30 kPa and is commonly observed when driving steel piling of 600mm inch diameter or larger. Currently, piles are to be installed with a vibratory hammer. Previous project experience has demonstrated that vibratory hammer activities typically generate pressure waves under 5 kPa.

If impact hammering is required, the environmental monitor shall be present to monitor pressure waves at various depths at a safe distance from the pile. If pressure waves exceed 30 kPa, the monitor shall stop works and require the contractor to install systems or processes to mitigate the pressure wave energy. The monitor shall remain onsite until convinced that the works are properly mitigated. Monitoring records shall be documented and kept on file.

7.4 SPECIES AT RISK AND MARINE MAMMAL MONITORING

To ensure that no marine mammals are endangered during the project phase a monitor will be on site to check for the presence of species at risk and marine mammals during the initial stages of the project. A member of the construction crew will be trained by the environmental monitor (EM) to identify species and make observations and report all sightings to the EM as they happen.

A 1km buffer zone will be established around the project site, if any cetaceans are observed within 1km during pile driving, work will be stopped until 30 minutes after they have left the safety zone. A 500m safety zone around the project site will be established for all other marine mammals, within which their behaviour will be observed and reported to the EM immediately. If the animal is deemed to be at risk or in distress, works will be stopped until the animal is considered no longer at risk or has left the buffer zone.

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7.5 PROJECT COMPLETION

Within 60 days of completion of all components of the project construction, a post-construction monitoring report will be prepared for DFO and the Proponent. The purpose of the report will be to demonstrate that the works have been constructed as required by any environmental approvals in place such as a *Fisheries Act* Authorization. It is expected that the report will include:

- as-built drawings showing the footprint of all structures constructed,
- a post-construction habitat balance sheet of actual areas constructed,
- a summary of work activities performed and timeline,
- a description comparing the actual habitat balance sheet to the approved habitat balance sheet with rational for any alterations or discrepancies,
- a summary of mitigation measures used and their effectiveness through the use of qualitative monitoring results such as pressure wave monitoring and water quality,
- details on any emergencies that may have occurred and how they were handled, and,
- a summary of any species at risk observed and any actions required.

7.6 POST CONSTRUCTION MONITORING

Biophysical assessment of the compensatory fish habitat shall be performed at two years and five years following construction. The assessments will be conducted by a qualified marine biological consultant who will submit a report to DFO on or before September 30th in each year that the monitoring assessments are conducted. The assessments will compare remediation of the compensatory habitats with pre-construction conditions and similar habitats within the Bear River Estuary in order to determine if the compensation is functioning as intended. The monitoring assessments will include, but will not be limited to:

- defining the species and aerial coverage by any transplanted or self-propagating vegetation (backshore, intertidal and subtidal vegetation will be documented in the survey),
- a species list of observed marine invertebrates and fish will be compiled and an estimate of numbers of individuals will be recorded,
- a minimum of 1,865 m2 of new salt marsh habitat shall be achieved, and,
- an assessment of habitat areas to determine if plug size, density or percent aerial coverage is increasing over time and are the compensation areas becoming comparable to conditions found at similar reference sites within the estuary.

Based on the results of the assessment, a statement with respect to the productive capacity of the restored/created fish habitat should be included in the annual monitoring report.

If the assessment determines that the fish habitats are being successfully restored and protected, the goal of 'No Net Loss' will have been achieved. If macro vegetation and invertebrate numbers within the estuary have not reached the coverage and density levels found in adjacent similar habitats in the estuary within five years, additional monitoring may be required and extended up to ten years post-construction.

If at the end of the monitoring period it becomes evident that the site is not functioning as intended, the proponent may need to provide additional compensation to replace the productive capacity of lost habitats. It is expected that appropriate additional replacement habitat will be negotiated by the proponent with the assistance of a qualified marine biological consultant and DFO.

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APPENDIX 1 – DFO CORRESPONDENCE

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Warren Appleton

From: Warren Appleton
Sent: July-11-12 5:50 PM
To: 'Chow, Darren'
Cc: 'bmoffat@stewartworldport.com'; Scott Christie
Subject: Stewart Barge Ramp Project
Attachments: 5397-R-02.1 Stewart Barge Ramp.pdf

Darren,

As per my voicemail, the Stewart Project has been revised so that it does not trigger the Comprehensive Study List Regulation associated with the Canadian Environmental Assessment Act. Specifically, the proponent is applying for Authorization for the installation of only a barge ramp at this time. The DFO application form, drawings and habitat balance sheet have all been adjusted to reflect the work required to reactive the existing barge ramp (attached).

We understand that there have been recent political changes to various acts and regulations (Fisheries Act, etc.). However, my understanding from the proponent is that there is considerable pressure and political support for this project to move forward by this fall.

Please give me a call at your earliest convenience to that we may discuss how to move forward with this project.

Regards,

Warren Appleton, RPBio
Project Biologist,
Balanced Environmental Services Inc.
118 Garden Ave., North Vancouver, B.C. V7P 3H2
Phone. 604.988.3033 | Fax. 604.988.3026 | www.balanced.ca

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Duncan

From: Warren Appleton
Sent: October 23, 2012 10:11 AM
To: Duncan
Subject: Fwd: Stewart Marsh Photos

Begin forwarded message:

From: "Koroluk, Bradley" <Bradley.Koroluk@dfo-mpo.gc.ca>
Date: 10 October, 2012 1:26:29 PM PDT
To: Warren Appleton <warren@balanced.ca>, Brad Moffat <bmoffat@stewartworldport.com>
Subject: RE: Stewart Marsh Photos

Hi gents,

I am expecting that the logistical issues surrounding the Airport Creek restoration project may be too much to be used as compensation for your project.

I appreciate Warren's rationale email below for the use of a salt marsh, there is no doubt it would have benefit. I spoke with Joy Hillier (Section Head) and keeping the project's time constraints associated in mind, while still providing good compensation opportunities DFO will accept salt marsh at a rate of 3:1 compensation for the total impacted area footprint below the HWM.

We will eventually need drawings, locations, planting and marsh creation plans, as well as a monitoring program. I know Warren is aware of what to provide. We also will use a cost estimate for the compensation project as a base for the Letter of Credit which we will hold as part of the Authorization; Brad have I mentioned that yet? If not let me know and I can provide a more detailed letter of information. First off we would need confirmation that the compensation option is acceptable to everyone and that there is enough 'barren' area to construct the compensation habitat.

If this works for you Brad please confirm. If you have any questions please give me a call, I will follow up with Warren as well to discuss details such as location sites etc.

Cheers

Brad

Bradley Koroluk
Habitat Management Biologist
Ecosystems Management Branch
BC North Coast, Fisheries and Oceans Canada
Box 130, Bella Coola BC, V0T 1C0
Telephone: (250) 799-5729, Fax: (250) 799-5540 Iridium: 881631629520

Bradley.Koroluk@dfo-mpo.gc.ca

Please visit DFO's Website: http://www.pac.dfo-mpo.gc.ca/habitat/index-eng.htm

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From: Warren Appleton [mailto:warren@balanced.ca]
Sent: October 1, 2012 12:48 PM
To: Koroluk, Bradley
Cc: Brad Moffat
Subject: Stewart Marsh Photos

Bradley,

We are currently looking into the feasibility of Airport Creek.

Further to the option of salt marsh construction, attached are a few photos of where we looked on site and have provided some rational why salt marsh was proposed:

- Salt marshes are of great importance to marine ecosystems in areas where deposition of silt results in limited photosynthetic productivity below the surface. This is particularly true in Stewart. Generation of phytoplankton is low as the sunlight cannot penetrate muddy water from the Bear River.

- Salt marshes offer canopy to hide from predators which inundated by the tide (a large number of species prey on juvenile salmon).

- Even though salt marshes are usually only narrow bands, they are the principal source of food source for sea creatures.

    - The "nutrient pump" results in the generation of detritus from the absorption of nutrients on the incoming tide, growth and decay of plants, which eventually fall and die. The majority of the detritus is pumped to sea and some is also consumed by organisms in the mudflats below. The detritus is food for bacteria, protozoans, small invertibrates, and clams, which in turn are eaten by larger invertebrates, fish, birds and mammals.

    - Salt marshes have an abundance of insects which are an important food source for many species including juvenile coho, which prefer aquatic insects like mayflies, caddis flies and stoneflies. Juvenile salmon also like terrestrial insects and small crustaceans, or larvae and insects.

Salt marsh is particularly important because of the focussing of juvenile coho that occupy the site. The construction of salt marsh in this particular location will provide additional food and shelter fish. Salt marsh was proposed because on previous projects it was accepted as high value compensation by DFO (in the past 9 years I have observed ratios of 6:1, 3:1 and 1:1 marsh : mud/sand/pebble on approved Authorizations).

In terms of the success of salt marshes, they tend to perform poorly in wave exposed areas and great in wave protected areas. For example, at the mouth of the bear river, a salt marsh would not perform well as the fine sediments would not stay. It makes more sense to construct one where there is wave protection and natural deposition of fines like at the proposed site.

If you have any questions please give me a call.

Regards,

Warren Appleton, RPBio
Senior Project Biologist,
Balanced Environmental Services Inc.
118 Garden Ave., North Vancouver, B.C. V7P 3H2
Phone. 604.988.3033 | Fax. 604.988.3026 | www.balanced.ca

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Fisheries and Oceans Canada | Pêches et Océans Canada

Fisheries and Oceans Canada
Box 130
Bella Coola, BC
V0T 1C0

August 22, 2012

Your file *Votre référence*
Barge Ramp Relocation Project

Our file *Notre référence*
12-HPAC-PA4-00248

Brad Moffat
Stewart World Port Services Ltd.
11421 Alaska Road
Fort Saint John, BC

Dear Mr. Moffat:

Subject: Proposal likely to result in impacts to fish and fish habitat. DFO authorization required.

Fisheries and Oceans Canada - Fish Habitat Management Program (DFO) received your proposal for review at this office on August 17, 2012. Please refer to the file number and title below:

DFO File No.: **12-HPAC-PA4-00248**
Title: **Barge Ramp Relocation Project**

You may be aware of recent changes to the *Fisheries Act*, however these have not affected the review of your project at this time. For more information on current changes to the *Fisheries Act*, as well as changes taking effect in the coming months, please refer to the DFO website www.dfo-mpo.gc.ca/habitat/habitat-eng.htm.

Your proposal has been reviewed to determine whether it is likely to result in impacts to fish and fish habitat which are prohibited by the habitat protection provisions of the *Fisheries Act*, or by those prohibitions of the *Species at Risk Act* that apply to aquatic species.*

Our review consisted of:
File 5397-F-0004.1_NWPA Form
File 5397-R-02.1 Stewart Barge Ramp (PRAF)

We understand that you propose to relocate an existing barge ramp facility to deeper water; which will be accomplished by extending the existing structure with a causeway and pilings at the Bear River estuary. The project as proposed has a footprint of 12,470m^2.

Based on the above information DFO has concluded that your proposal is likely to result in impacts to fish and fish habitat. Of particular concern is the potential for your proposal to result in the harmful alteration or disruption, or the destruction of fish habitat, which is prohibited under Section 35 of the *Fisheries Act*. In order to be in compliance with the above legislation you must

*Those sections most relevant to the review of development proposals include 20, 22, 32 and 35 of the *Fisheries Act* and sections 32, 33 and 58 of the *Species at Risk Act*. For more information please visit www.dfo-mpo.gc.ca.

.../2

Canada

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obtain an authorization from DFO. In most cases the issuance of a *Fisheries Act* authorization is conditional on developing habitat compensation and monitoring plans to offset harm to fish habitat.

In order for us to continue processing your request please provide additional information regarding:

- The complete foreshore/intertidal fish habitat assessment report for the proposed area.
- The habitat compensation plan, including mitigation measures to offset the loss of fish habitat. In most cases, this offset is a condition for issuing the authorization.
- A monitoring plan that will ensure habitat compensation and mitigation measures function properly.
- Additional information and clarification regarding the means of assessment and measures to protect SARA listed species which may use this area will be considered as part of this assessment. More information can be found at www.sararegistry.gc.ca
- Assessment of fish presence/absence and utilization of this area; including salmonids, eulachon and herring. Any mitigation measures that will minimize or avoid negative impacts to them.

Please be advised that any impacts to fish and fish habitat which result from proceeding with your proposal without first obtaining a *Fisheries Act* authorization could lead to corrective action such as enforcement. In addition, under the new *Fisheries Act*, there is a requirement to notify DFO of any harmful alteration or disruption, or any destruction, of fish habitat that has not been authorized. Such notifications should be directed to DFO Prince Rupert office.

I would also like to make arrangements for an onsite visit in September if possible.

If you have any questions please contact Bradley Koroluk at our Bella Coola office at 250-799-5729, by fax at 250799-5540, or by email at Bradley.Koroluk@dfo-mpo.gc.ca

Sincerely,

Bradley Koroluk

Bradley Koroluk
Habitat Management Biologist

Cc: Joy Hillier – Section Head, DFO Prince Rupert
Warren Appleton – Balanced Environmental Service

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APPENDIX 2 – FIRST NATIONS CORRESPONDENCE

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Fisheries and Oceans
Pêches et Océans

Pacific Region
Fisheries and Oceans Canada
Box 130
Bella Coola, BC V0T 1C0

September 25, 2012

Harry Nyce Sr.
Director, Fish and Wildlife
Nisga'a Lisims Government
Email: eagle1@nisgaa.net

Dear Mr. Nyce Sr.;

Subject: ***Second Request - Review of proposed Barge Ramp Relocation Project at Bear River Estuary, Stewart BC.***

Fisheries and Oceans Canada (DFO) has received a proposal from Stewart World Port Services Ltd. to extend an existing barge ramp near the Bear River estuary in Stewart. The site is located on the Portland Canal between the Stewart estuary and the Bear River at an existing log dump. The project involves construction of a gravel and rip-rap extension of the existing causeway, installation of steel pilings and floating ramp. Please refer to the attached project description previously provided, which provides information on the current plans for the project. If you require the project description please contact me directly.

DFO has determined that the proposed project is likely to require an Authorization under Section 35 (2) of the *Fisheries Act*. DFO is at the early stages of review for this project and in order to fully assess the fisheries impacts related to the construction of the proposed project, we must understand and consider the potential impacts to current and traditional fisheries related uses of the area by aboriginal peoples.

DFO would like to invite your input regarding the project as it relates to fisheries interests of the Nisga'a Lisims Nation. In order to consider potential impacts on current or traditional uses of the area, the following information (for example) would be particularly useful:

1) What current or traditional fishing activities are undertaken in the project area?
2) How would the proposed project impact those activities?
3) Can you suggest a way to mitigate the impact of the project on those activities?

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On behalf of DFO I look forward to exchanging information with you and learning about Nisga'a Lisims interest in the proposed project. Should you have any questions or comments, please contact me (250-799-5729; Bradley.Koroluk@dfo-mpo.gc.ca) at your convenience to discuss the project.

Sincerely,

Bradley Koroluk

Bradley Koroluk,
Habitat Management Biologist
Ecosystems Management Branch
North Coast Area

Cc:

Joy Hillier: Section Head, North Coast Area - Ecosystems Management Branch
Brad Moffat: Stewart World Port Services Ltd.
Warren Appleton: Balanced Environmental Service

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Fisheries and Oceans
Pêches et Océans

Pacific Region
Fisheries and Oceans Canada
Box 130
Bella Coola, BC V0T 1C0

August 29, 2012

Harry Nyce Sr.
Director, Fish and Wildlife
Nisga'a Lisims Government
Email: eagle1@nisgaa.net

(Via email)

Dear Mr. Nyce;

Subject: ***Review of proposed Barge Ramp Relocation Project at Bear River Estuary, Stewart BC.***

Fisheries and Oceans Canada (DFO) has received a proposal from Stewart World Port Services Ltd. to extend an existing barge ramp near the Bear River estuary in Stewart. The site is located on the Portland Canal between the Stewart estuary and the Bear River at an existing log dump. The project involves construction of a gravel and rip-rap extension of the existing causeway, installation of steel pilings and floating ramp. Please refer to the attached project description, which provides information on the current plans for the project.

DFO has determined that the proposed project is likely to require an Authorization under Section 35 (2) of the *Fisheries Act*. DFO is at the early stages of review for this project and in order to fully assess the fisheries impacts related to the construction of the proposed project, we must understand and consider the potential impacts to current and traditional fisheries related uses of the area by aboriginal peoples.

DFO would like to invite your input regarding the project as it relates to fisheries interests of the Nisga'a Lisims Nation. In order to consider potential impacts on current or traditional uses of the area, the following information (for example) would be particularly useful:

1) What current or traditional fishing activities are undertaken in the project area?
2) How would the proposed project impact those activities?
3) Can you suggest a way to mitigate the impact of the project on those activities?

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On behalf of DFO I look forward to exchanging information with you and learning about Nisga'a Lisims interest in the proposed project. Should you have any questions or comments, please contact me (250-799-5729; Bradley.Koroluk@dfo-mpo.gc.ca) at your convenience to discuss the project.

Sincerely,

Bradley Koroluk

Bradley Koroluk,
Habitat Management Biologist
Ecosystems Management Branch
North Coast Area

Attachments: Project Description

Cc:

Joy Hillier: Section Head, North Coast Area - Ecosystems Management Branch
Brad Moffat: Stewart World Port Services Ltd.
Warren Appleton: Balanced Environmental Service

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APPENDIX 3 – FISS DATABASE RESULTS

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Back Main Queries Page

Fisheries Inventory - FISS Fish Distributions Report

304 record(s) matched your query.
Report created on : Thu Jun 07 11:06:44 PDT 2012

Your report was based on the following criteria:

Gazetted Name/Alias : Bear River
Ordered By : Gazetted Name

Gazetted Name	Region	Code	Species Name	Stock Type	Stock Char	Stock Name	Management Class	Activity	Map 1	Point 1	Type 1	Map 2	Point 2	Type 2	Refs And Dates
AMOR DE COSMOS CREEK	1	CAL	Coastrange Sculpin (formerly Aleutian Sculpin)	NOT SPECIF	Fluvial		Wild indigenous	REA Rearing location	092K04	2063	P				(MJL004, 01-FEB-1
AMOR DE COSMOS CREEK	1	CCT	Coastal Cutthroat Trout	NOT SPECIF	Not Specif		Not Specified	REA Rearing location	092K04	2063	P				(MJL004, 01-FEB-1
AMOR DE COSMOS CREEK	1	CCT	Coastal Cutthroat Trout	NOT SPECIF	Not Specif		Not Specified	REA Rearing location	092K04	2107	P				(MJL004, 01-FEB-1
AMOR DE COSMOS CREEK	1	CH	Chinook Salmon	NOT SPECIF	Anadromous		Not Specified	OBL Fish observed at this point or zone		309629	W				(13-1, 01-JAN-1977 (PH006, 01-JAN-19
AMOR DE COSMOS CREEK	1	CM	Chum Salmon	NOT SPECIF	Anadromous		Not Specified	OBL Fish observed at this point or zone		309629	W				(CR001B, 01-JAN-1 (PH006, 01-JAN-19
AMOR DE COSMOS CREEK	1	CM	Chum Salmon	NOT SPECIF	Anadromous		Not Specified	SPM Major spawning location	092K05	2015	U	092K05	2016	D	(13-1, 01-JAN-1977 (CR001A, 01-JAN-1 (CR001B, 01-JAN-1 (M026, 01-JAN-199
AMOR DE COSMOS CREEK	1	CO	Coho Salmon	NOT SPECIF	Anadromous		Not Specified	OBL Fish observed at this point or zone		309629	W				(PH006, 01-JAN-19
AMOR DE COSMOS CREEK	1	CO	Coho Salmon	NOT SPECIF	Anadromous		Not Specified	SPL Spawning location	092K05	2014	U				(13-1, 01-JAN-1977
AMOR DE COSMOS CREEK	1	PK	Pink Salmon	NOT SPECIF	Anadromous		Not Specified	OBL Fish observed at this point or zone		309629	W				(CR001A, 01-JAN-1
AMOR DE COSMOS CREEK	1	PK	Pink Salmon	NOT SPECIF	Anadromous		Not Specified	SPM Major spawning location	092K05	2013	U				(CR001A, 01-JAN-1
AMOR DE COSMOS CREEK	1	PK	Pink Salmon	NOT SPECIF	Anadromous		Not Specified	SPM Major spawning location	092K05	2015	U	092K05	2016	D	(13-1, 01-JAN-1977 (M026, 01-JAN-199
AMOR DE COSMOS CREEK	1	PK	Pink Salmon	NOT SPECIF	Anadromous		Not Specified	SPM Major spawning location	092K05	2016	U				(CR001A, 01-JAN-1
AMOR DE COSMOS CREEK	1	RB	Rainbow Trout	NOT SPECIF	Not Specif		Not Specified	OBL Fish observed at this point or zone	092K05	2014	U				(HQ2059, 01-FEB-2
AMOR DE COSMOS CREEK	1	ST	Steelhead	NOT SPECIF	Anadromous		Not Specified	SPL Spawning location	092K05	2014	U				(13-1, 01-JAN-1977
AMOR DE COSMOS CREEK	1	ST	Steelhead	NOT SPECIF	Not Specif		Not Specified	OBL Fish observed at this point or		309629	W				(DFO177, 01-FEB-2 (STLHD-SUM, no d

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							zone					
AMOR DE COSMOS CREEK	1	TSB	Threespine Stickleback	NOT SPECIF	Fluvial	Wild indigenous	REA Rearing location	092K04	2063	P		(MJL004, 01-FEB-1
AMOR DE COSMOS CREEK	1	WST	Steelhead (Winter-run)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092K05	2014	U		(HQ2059, 01-FEB-2
AMOR DE COSMOS CREEK	1	WST	Steelhead (Winter-run)	NOT SPECIF	Not Specif	Not Specified	REA Rearing location	092K05	2014	U		(HQ2059, 01-FEB-2
BEAR RIVER	2	DV	Dolly Varden	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092K14	337194	P		(RABSVY-176317,
BEAR RIVER	2	DV	Dolly Varden	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092K14	341450	P		(RABSVY-183270,
BEAR RIVER	2	DV	Dolly Varden	NOT SPECIF	Resident	Wild indigenous	OBL Fish observed at this point or zone	092K14	3	U		(1RABVIC, 01-APR
BEAR RIVER	2	DV	Dolly Varden	NOT SPECIF	Resident	Wild indigenous	OBL Fish observed at this point or zone		268876	W		(2FBSRY, 01-JAN-'
BEAR RIVER	2	SP	Unidentified Species	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092K14	337194	P		(RABSVY-176317,.
BEAR RIVER	2	SP	Unidentified Species	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092K14	341450	P		(RABSVY-183270,
BEAR RIVER	2	ST	Steelhead	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		268876	W		(STLHD-SUM, no d
BEAR RIVER	6	C	Minnow (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W		(4D-165, 01-JAN-19
BEAR RIVER	6	CAS	Prickly Sculpin	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W		(4D-165, 01-JAN-19
BEAR RIVER	6	CBC	Chub (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W		(4D-165, 01-JAN-19
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P		(RABSVY-174464,
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P		(RABSVY-174465,
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D07	22	P		(HQ1338, 01-SEP-1
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this		212120	W		(SC-537, 01-JAN-19 (SC-875, 01-JAN-19

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							point or zone							
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	094D02	1	U	094D02	2	D	(4D-102, no date) (4D-92, no date)
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	094D07	3	U	094D07	4	D	(4D-102, no date) (4D-92, no date)
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location		212120	W				(4D-102, no date) (4D-92, no date)
BEAR RIVER	6	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	103P13	6	P				(SISSM01, 01-JAN-
BEAR RIVER	6	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	103P13	4	U	103P13	5	D	(SISSM01, 01-JAN-
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P				(RABSVY-174464,
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P				(RABSVY-174465,
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		212120	W				(4D-92, no date)
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	103P13	7	P				(SISSM01, 01-JAN-
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	104A04	7	P				(SISSM01, 01-JAN-
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	103P13	4	U	103P13	5	D	(SISSM01, 01-JAN-

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BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	104A04	4	U	104A04	3	D	(SISSM01, 01-JAN-
BEAR RIVER	6	DV	Dolly Varden	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W				(SC-383, 01-JAN-19
BEAR RIVER	6	L	Lamprey (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W				(4D-165, 01-JAN-19
BEAR RIVER	6	LNC	Longnose Dace	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	094D07	2	P				(SC-875, 01-JAN-19
BEAR RIVER	6	LNC	Longnose Dace	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W				(4D-165, 01-JAN-19 (SC-537, 01-JAN-19
BEAR RIVER	6	MW	Mountain Whitefish	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W				(SC-537, 01-JAN-19
BEAR RIVER	6	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P				(RABSVY-174464,
BEAR RIVER	6	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P				(RABSVY-174465,
BEAR RIVER	6	RB	Rainbow Trout	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P				(RABSVY-174464,
BEAR RIVER	6	RB	Rainbow Trout	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P				(RABSVY-174465,
BEAR RIVER	6	RB	Rainbow Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	094D07	22	P				(HQ1338, 01-SEP-1
BEAR RIVER	6	RB	Rainbow Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W				(4D-165, 01-JAN-19 (4D-22, no date) (4D-92, no date)
BEAR RIVER	6	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P				(RABSVY-174464,
BEAR RIVER	6	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P				(RABSVY-174465,
BEAR	6	SK	Sockeye	NOT	Anadromous	Not Specified	OBL Fish observed at this		212120	W				(4D-92, no date)

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RIVER			Salmon	SPECIF			point or zone							
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P				(RABSVY-174464,
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P				(RABSVY-174465,
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		212120	W				(SC-383, 01-JAN-19
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	094D02	5	U	094D02	6	D	(4D-102, no date)
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	094D02	1	U	094D02	4	D	(4D-102, no date)
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	094D07	3	U	094D07	5	D	(4D-1, no date) (4D-102, no date) (4D-22, no date)
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		295181	W				(STLHD-SUM, no d
BEDWELL RIVER	1	ACT	Cutthroat Trout (Anadromous)	NOT SPECIF	Anadromous	Wild indigenous	OBL Fish observed at this point or zone		319553	W				(14-5, no date)
BEDWELL RIVER	1	CAL	Coastrange Sculpin (formerly Aleutian Sculpin)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343292	P				(24-9, 01-JAN-1989
BEDWELL RIVER	1	CAL	Coastrange Sculpin (formerly Aleutian Sculpin)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343296	P				(24-9, 01-JAN-1989
BEDWELL RIVER	1	CAS	Prickly Sculpin	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343292	P				(24-9, 01-JAN-1989
BEDWELL RIVER	1	CAS	Prickly Sculpin	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343296	P				(24-9, 01-JAN-1989
BEDWELL RIVER	1	CAS	Prickly Sculpin	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343300	P				(24-9, 01-JAN-1989
BEDWELL RIVER	1	CC	Sculpin (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	63	P				(24-21, 01-JAN-199
BEDWELL RIVER	1	CC	Sculpin (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	64	P				(24-21, 01-JAN-199
							OBL Fish observed							

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BEDWELL RIVER	1	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	at this point or zone	092F05	344675	U			(HQ2764, 01-JAN-1
BEDWELL RIVER	1	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		319553	W			(HQ2764, 01-JAN-1
BEDWELL RIVER	1	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	092F05	14	U	092F05 13	D	(24-1, 01-JAN-1979
BEDWELL RIVER	1	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	092F05	17	U	092F05 16	D	(24-1, 01-JAN-1979
BEDWELL RIVER	1	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092F05	344675	U			(HQ2764, 01-JAN-1
BEDWELL RIVER	1	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		319553	W			(HQ2764, 01-JAN-1
BEDWELL RIVER	1	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	092F05	15	U	092F05 12	D	(24-1, 01-JAN-1979
BEDWELL RIVER	1	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092F05	343292	P			(24-9, 01-JAN-1989
BEDWELL RIVER	1	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092F05	343296	P			(24-9, 01-JAN-1989
BEDWELL RIVER	1	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092F05	343300	P			(24-9, 01-JAN-1989
BEDWELL RIVER	1	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092F05	344675	U			(HQ2764, 01-JAN-1
BEDWELL RIVER	1	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		319553	W			(HQ2764, 01-JAN-1
BEDWELL RIVER	1	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	092F05	19	U	092F05 18	D	(24-1, 01-JAN-1979
BEDWELL RIVER	1	CT	Cutthroat Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		319553	W			(HQ2764, 01-JAN-1
BEDWELL RIVER	1	CT	Cutthroat Trout	NOT SPECIF	Resident	Wild indigenous	OBL Fish observed at this point or zone		319553	W			(14-9, 01-JAN-1993
BEDWELL RIVER	1	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092F05	344675	U			(HQ2764, 01-JAN-1
BEDWELL RIVER	1	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		319553	W			(24-1, 01-JAN-1979
							OBL Fish						

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BEDWELL RIVER	1	RB	Rainbow Trout	NOT SPECIF	Not Specif	Not Specified	observed at this point or zone	092F05	343292	P	(24-9, 01-JAN-1989
BEDWELL RIVER	1	RB	Rainbow Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343296	P	(24-9, 01-JAN-1989
BEDWELL RIVER	1	RB	Rainbow Trout	NOT SPECIF	Resident	Wild indigenous	OBL Fish observed at this point or zone	092F05	64	P	(24-21, 01-JAN-199
BEDWELL RIVER	1	RB	Rainbow Trout	NOT SPECIF	Resident	Wild indigenous	OBL Fish observed at this point or zone		319553	W	(24-9, 01-JAN-1989
BEDWELL RIVER	1	SB	Stickleback (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343300	P	(24-9, 01-JAN-1989
BEDWELL RIVER	1	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092F05	64	P	(24-21, 01-JAN-199
BEDWELL RIVER	1	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092F05	344675	U	(HQ2764, 01-JAN-1
BEDWELL RIVER	1	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092F05	344675	U	(HQ2764, 01-JAN-1
BEDWELL RIVER	1	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		319553	W	(HQ2764, 01-JAN-1
BEDWELL RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		319553	W	(STLHD-SUM, no d
BEDWELL RIVER	1	ST	Steelhead	WINTER	Anadromous	Wild indigenous	OBL Fish observed at this point or zone		319553	W	(14-5, no date)
BOWRON RIVER	5	BB	Burbot	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06	518	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	BB	Burbot	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12	532	P	(EDI0002, 01-JAN-'
BOWRON RIVER	5	BB	Burbot	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		17099	W	(29I-5, 01-JAN-198'
BOWRON RIVER	5	BT	Bull Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		17099	W	(LM4696, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05	502	P	(29I-105, 01-JAN-19
							OBL Fish observed				

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BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	at this point or zone	093H05 503	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 504	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 506	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 507	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 508	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 502	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 504	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 505	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 507	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 509	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 510	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 511	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 512	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 513	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 514	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 517	P	(29I-105, 01-JAN-1
BOWRON	5	CC	Sculpin	NOT	Fluvial	Wild	OBL Fish observed at this	093H06 518	P	(29I-105, 01-JAN-1

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RIVER		(General)	SPECIF		indigenous	point or zone				
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 519	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 502	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 503	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 506	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 507	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 509	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 510	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 511	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 532	P	(EDI0002, 01-JAN-
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H13 502	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CC	Sculpin (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	17099	W	(29I-5, 01-JAN-198
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	093H12 532	P	(EDI0002, 01-JAN-
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H05 502	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H05 503	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H05 504	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H05 506	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H05 507	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H05 508	P	(29I-105, 01-JAN-19

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BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H05 509	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 502	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 503	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 504	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 505	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 507	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 508	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 509	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 510	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 511	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 512	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 513	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 514	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 517	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 518	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H06 519	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H12 502	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H12 504	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H12 505	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H12 506	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H12 508	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H12 509	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H12 510	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H12 511	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H12 512	P	(29I-105, 01-JAN-1
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H13 502	P	(29I-105, 01-JAN-1

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BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H13 506	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H13 507	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	093H13 509	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	REA Rearing location	17099	W			(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	093H05 600	U	093H05 508	D	(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	093H05 602	U	093H05 601	D	(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	093H05 603	U	093H05 503	D	(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	093H06 501	U	093H06 600	D	(29I-105, 01-JAN-19
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	093H06 512	U	093H06 602	D	(SISSM01, 01-JAN-
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	093H06 517	U	093H06 603	D	(SISSM01, 01-JAN-
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	093H06 601	U	093H06 511	D	(SISSM01, 01-JAN-
BOWRON RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	093H13 2	U	093H13 1	D	(29I-2, 01-JAN-198
BOWRON RIVER	5	CO	Coho Salmon	NOT SPECIF	Anadromous	Wild indigenous	OBL Fish observed at this point or zone	17099	W			(DFO0460, 01-JAN-
BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 506	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 507	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 508	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 501	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 502	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 505	P			(29I-105, 01-JAN-19
							OBL Fish					

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BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Fluvial	Wild indigenous	observed at this point or zone	093H06 508	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 514	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	093H12 502	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	093H13 507	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	CSU	Largescale Sucker	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	17099	W		(29I-5, 01-JAN-198
BOWRON RIVER	5	DV	Dolly Varden	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 510	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	DV	Dolly Varden	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 502	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	DV	Dolly Varden	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 505	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	DV	Dolly Varden	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 510	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	DV	Dolly Varden	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H13 506	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	DV	Dolly Varden	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	17099	W		(29I-87, 01-JAN-198
BOWRON RIVER	5	KO	Kokanee	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	17099	W		(LM4696, 01-JAN-1
BOWRON RIVER	5	LDC	Leopard Dace	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	17099	W		(29I-105, 01-JAN-19
BOWRON RIVER	5	LNC	Longnose Dace	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 502	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	LNC	Longnose Dace	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 504	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	LNC	Longnose Dace	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 508	P		(29I-105, 01-JAN-19
							OBL Fish observed				

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BOWRON RIVER	5	LNC	Longnose Dace	NOT SPECIF	Fluvial	Wild indigenous	at this point or zone	093H06 510	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	LNC	Longnose Dace	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 518	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	LNC	Longnose Dace	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 502	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	LNC	Longnose Dace	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 504	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	LNC	Longnose Dace	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 508	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	LNC	Longnose Dace	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 510	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	LNC	Longnose Dace	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	17099	W	(29I-5, 01-JAN-198
BOWRON RIVER	5	LSU	Longnose Sucker	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	17099	W	(29I-105, 01-JAN-19
BOWRON RIVER	5	LT	Lake Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	17099	W	(LM4696, 01-JAN-1
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 502	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 503	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 504	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 506	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 507	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 508	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05 509	P	(29I-105, 01-JAN-19
BOWRON	5	MW	Mountain	NOT	Fluvial	Wild	OBL Fish observed at this	093H06 501	P	(29I-105, 01-JAN-19

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RIVER			Whitefish	SPECIF		indigenous	point or zone				
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 502	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 503	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 504	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 505	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 507	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 509	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 510	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 513	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 514	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 517	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 518	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 519	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 502	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 503	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 507	P		(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or	093H12 508	P		(29I-105, 01-JAN-19

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							zone			
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 509	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 510	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 511	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12 512	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H13 502	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H13 504	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H13 506	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H13 507	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H13 509	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	17099	W	(29I-87, 01-JAN-198
BOWRON RIVER	5	MW	Mountain Whitefish	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	17099	W	(LM4696, 01-JAN-1
BOWRON RIVER	5	NSC	Northern Pikeminnow	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 505	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	NSC	Northern Pikeminnow	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 507	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	NSC	Northern Pikeminnow	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 508	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	NSC	Northern Pikeminnow	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06 513	P	(29I-105, 01-JAN-19
BOWRON RIVER	5	NSC	Northern Pikeminnow	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	093H06 504	P	(29I-105, 01-JAN-19

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BOWRON RIVER	5	NSC	Northern Pikeminnow	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		17099	W			(29I-5, 01-JAN-198
BOWRON RIVER	5	PW	Pygmy Whitefish	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		17099	W			(LM4696, 01-JAN-1
BOWRON RIVER	5	RB	Rainbow Trout	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05	503	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	RB	Rainbow Trout	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H05	504	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	RB	Rainbow Trout	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H06	502	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	RB	Rainbow Trout	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone		17099	W			(29I-87, 01-JAN-19
BOWRON RIVER	5	RB	Rainbow Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	093H13	504	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	RB	Rainbow Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	093H13	341853	P			(RABSVY-183701,
BOWRON RIVER	5	RB	Rainbow Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		17099	W			(LM4696, 01-JAN-1
BOWRON RIVER	5	RSC	Redside Shiner	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	093H12	503	P			(29I-105, 01-JAN-19
BOWRON RIVER	5	RSC	Redside Shiner	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		17099	W			(29I-5, 01-JAN-198
BOWRON RIVER	5	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	093H03	5	P			(SISSM01, 01-JAN-
BOWRON RIVER	5	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		17099	W			(29I-2, 01-JAN-198
BOWRON RIVER	5	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	093H03	8	P			(SISSM01, 01-JAN-
BOWRON RIVER	5	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	093H03	7	U	093H03 6	D	(29I-2, 01-JAN-198
BOWRON RIVER	5	WSG	White Sturgeon	NOT SPECIF	Adfluvial	Wild indigenous	OBL Fish observed at this point or zone	093G16	1003	P			(HQ1716, 01-APR-
BOWRON RIVER	5	WSG	White Sturgeon	NOT SPECIF	Adfluvial	Wild indigenous	OBL Fish observed at this point or	093I04	1004	P			(HQ1716, 01-APR-

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							zone				
BOWRON RIVER	5	WSG	White Sturgeon	NOT SPECIF	Adfluvial	Wild indigenous	OBL Fish observed at this point or zone		17099	W	(HQ1716, 01-APR-'
MILLS CREEK	1	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092L11	2058	P	(12B-20, no date)
MILLS CREEK	1	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		314114	W	(PH006, 01-JAN-19
MILLS CREEK	1	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location		314114	W	(PH029, 01-JAN-19
MILLS CREEK	1	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092L11	2060	U	(12B-1, 01-JAN-197
MILLS CREEK	1	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		314114	W	(PH006, 01-JAN-19 (PH029, 01-JAN-19
MILLS CREEK	1	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092L11	2058	P	(12B-20, no date)
MILLS CREEK	1	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		314114	W	(PH006, 01-JAN-19
MILLS CREEK	1	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	092L11	2058	U	(PH029, 01-JAN-19
MILLS CREEK	1	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location		314114	W	(PH029, 01-JAN-19
MUSSEL RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	103A16	9015	P	(BC-062, 01-JAN-1!
MUSSEL RIVER	5	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		286563	W	(7-1, 01-JAN-1981)
MUSSEL RIVER	5	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	103A16	9015	P	(7-1, 01-JAN-1981) (7-22, 01-JAN-1989
MUSSEL RIVER	5	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	103A16	9017	P	(BC-062, 01-JAN-1!
MUSSEL RIVER	5	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		286563	W	(7-1, 01-JAN-1981)
MUSSEL RIVER	5	DV	Dolly Varden	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		286563	W	(7-22, 01-JAN-1989
MUSSEL RIVER	5	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or	103A16	9017	P	(BC-062, 01-JAN-1!

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							zone							
MUSSEL RIVER	5	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	103A16	9015	P				(7-1, 01-JAN-1981) (7-22, 01-JAN-1989
MUSSEL RIVER	5	RB	Rainbow Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		286563	W				(7-22, 01-JAN-1989
MUSSEL RIVER	5	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	103A16	9017	P				(BC-062, 01-JAN-1
MUSSEL RIVER	5	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		286563	W				(7-1, 01-JAN-1981)
MUSSEL RIVER	5	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		286563	W				(7-22, 01-JAN-1989
MUSSEL RIVER	5	ST	Steelhead	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		286563	W				(STLHD-SUM, no d
SUCWOA RIVER	1	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	092E15	15	U				(25-2, 01-JAN-1979
SUCWOA RIVER	1	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092E15	15	U				(HQ1106, 01-FEB-1
SUCWOA RIVER	1	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	092E15	15	U				(25-2, 01-JAN-1979
SUCWOA RIVER	1	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092E15	6	U				(25-2, 01-JAN-1979
SUCWOA RIVER	1	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		322117	W				(HQ1106, 01-FEB-1
SUCWOA RIVER	1	CT	Cutthroat Trout	NOT SPECIF	Adfluvial	Wild indigenous	OBL Fish observed at this point or zone		322117	W				(14-9, 01-JAN-1993
SUCWOA RIVER	1	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	092E15	15	U				(HQ1106, 01-FEB-1
SUCWOA RIVER	1	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	092E15	15	U				(25-2, 01-JAN-1979
SUCWOA RIVER	1	RB	Rainbow Trout	NOT SPECIF	Adfluvial	Augmented	SPM Major spawning location	092E15	13	U	092E15	12	D	(26-14, no date)
SUCWOA RIVER	1	RB	Rainbow Trout	NOT SPECIF	Fluvial	Not Specified	OBL Fish observed at this point or zone		322117	W				(14-9, 01-JAN-1993
SUCWOA RIVER	1	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		322117	W				(25-2, 01-JAN-1979 (HQ1106, 01-FEB-1
SUCWOA RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this		322117	W				(STLHD-SUM, no d

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SUCWOA RIVER	1	ST	Steelhead	WINTER	Anadromous	Wild indigenous	point or zone OBL Fish observed at this point or zone	092E15	8	U	(25-15, 01-JAN-198

Download this information as a .csv file

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APPENDIX 4 – DFO APPLICATION FORM

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PROJECT NOTIFICATION AND REVIEW APPLICATION FORM

Fisheries and Oceans Canada
Pacific Region

FOR DFO OFFICE USE ONLY
DFO Receive Date:
DFO Sub-Area Office:
Path #:
ADM:

To determine whether you should complete this form, follow the steps on DFO's Working Near Water website (www.pac.dfo-mpo.gc.ca/habitat/know-savoir-eng.htm). For instructions on how to complete and submit this form, refer to the Directions (www.pac.dfo-mpo.gc.ca/habitat/steps/praf/guide-eng.htm) or click on the number links on the left. Forms will not be processed unless all fields are properly completed as described in the directions. Where additional information is provided in attached documents, you must include an appropriate summary in the space provided on the form. Please note that it is your responsibility to understand and comply with other jurisdictions and regulations applicable to your project.

Application Form Type (select only one type):

1 ○ **Notification to DFO.** *Please notify DFO 10 business days before starting your work. DFO does not typically respond to Notifications.*

or

○ **Request for Project Review**

Have you attached "Additional Information to Support a Project Review"? ○ Yes ○ No

or

◉ **Request for a *Fisheries Act* Authorization?**

Have you attached "Additional Information for a Fisheries Act Authorization"? ◉ Yes ○ No

Submission of this form serves as a Subsection 58(1) Schedule VI Fishery (General) Regulations application.

2 **Project Title:** Barge Ramp Relocation Project

Project Summary

3 Is this a "Building Canada" federally funded infrastructure project? ○ Yes ◉ No

Is the work or undertaking proposed in response to an emergency as defined by DFO? ○ Yes ◉ No

Does the project:

- *Have any components within 30 m of the high water mark of a watercourse or water body?* ◉ Yes ○ No
- *Require removal of vegetation within 30 m of the high water mark of a watercourse or water body?* ○ Yes ◉ No
- *Have downstream impacts on water quality or water quantity?* ○ Yes ◉ No

Does the project involve in-water works (below the high water mark)? ◉ Yes ○ No

Contact Information for Proponent, Contractor and Consultant

4 Name of proponent: Stewart World Port Services Ltd.

Province/Territory: British Columbia

Contact name: Brad Moffat

Postal code: V1J 6N2

Mailing address: 11421 Alaska Rd.

Tel no.: (250) 819-4341 Ext.

Fax no.:

City/Town: Fort St. John

Email: bmoffat@stewartworldport.com

Is the Proponent the primary contact for this project? ○ Yes ◉ No

If no, please enter information for the primary contact in the space below:

Select type of additional contact: ○ Contractor ◉ Consultant

Name of contractor/consultant: Balanced Environmental Service

Province/Territory: British Columbia

Postal code: V7P 3H2

Contact name: Warren Appleton

Tel no.: (604) 988-3033 Ext.

Mailing address: 118 Garden Ave

Fax no.:

Email: warren@balanced.ca

City/Town: North Vancouver

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Location of Proposed Development

5 DFO sub-area: 3-16

Name of nearest community: Stewart

Municipality or District: District of Stewart Province/Territory: British Columbia

Address or legal description:

DL7318 Stewart, B.C.

Name of watershed: Portland Canal

Name of watercourse(s) or water body(ies) likely to be affected: Portland Canal beside mouth of Bear River

Map coordinates of the proposed development:

Latitude 55.917895 *N* **or** *UTM zone* ____ ; _____ *Easting* _____ *Northing*

Longitude -129.99488 *W*

6 Brief directions to access the proposed project site: *(limit of 240 characters)*

From Terrace, BC drive west to Kitwanga, drive north on highway 37 to the Meziadin Junction, turn left on Highway 37a, drive to the Stewart town site, and drive to the end of Railway St. to reach the existing Cassiar dock.

Other Permitting Processes

7 **For projects proposed in British Columbia:**

Have you made a submission under BC Water Act? ○ Yes ◉ No

If yes, please indicate the type and provide the file number:

- ○ Section 9 Notification - Tracking #:
- ○ Section 9 Approval - Water File #:
- ○ Water License - Water File #:

Does the British Columbia Riparian Areas Regulation apply to this project? ○ Yes ◉ No

If yes, are you requesting a variance? File #: ○ Yes ○ No

For projects proposed in Yukon:

Have you submitted a project application to Yukon Environmental and Socio-Economic Assessment Board? ○ Yes ○ No

If yes, please provide the YESAB project number:

Description of the Aquatic Environment

8 **What is the type of watercourse or water body that you plan to work in or near?**

Freshwater:	☐ Stream	☐ Lake	☐ Wetland
	☐ River mainstem	☐ Pond	
	☐ Active floodplain	☐ Reservoir	
Coastal and Marine:	☐ Exposed coastline	☐ Cove	☐ Mud flat
	☐ Salt marsh	☐ Bay	☐ Beach
Other:	☑ Estuary		

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Description of the Aquatic Environment *(continued)*

9 Briefly describe the biological and physical characteristics of the proposed project site. *(limit of 800 characters)*
(Channel width, type and flow, tides, water depth, substrate type and density, aquatic and riparian vegetation type and density)

Site is located on the Portland Canal between the Stewart Estuary and the Bear River at an active log dump. Substrate at the site is primarily pebble, with silt & sand becoming muddy towards west and riprap present around causeway. Visible biota density is low. Macro-algae is primarily limited to rockweed growing in the middle intertidal on large stable substrates. Diatoms are present in lower intertidal and crabs in the subtidal. Small patch of hairgrass growing on causeway aswell. No eelgrass, kelp or clams observed. Bear River is a known fish bearing watercourse. Locals state juvenile coho use estuary. See attached report.

10 Include representative photos of affected area and clearly mark the location of proposed activities.

Have you attached photos? ◉ Yes ○ No

11 For freshwater, what fish species are known to be present at or near your project?

☐ Salmon (anadromous only) ☐ Other

12 Are any aquatic species likely present at the project site that are:

Listed under the federal Species at Risk Act?	○ Yes	◉ No	○ Uncertain
Designated under the British Columbia Wildlife Act?	◉ Yes	○ No	○ Uncertain
Listed under the Yukon Wildlife Act?	○ Yes	◉ No	○ Uncertain

If yes, list the species:

Bull Trout, Dolly Varden

Description of the Proposed Development

13 With which industry is your project associated?

☐ Agriculture	☑ Industrial/commercial	☐ Power generation
☐ Aquaculture	☐ Military/security	☐ Private residential
☐ Commercial fishing	☐ Mining	☐ Transportation
☐ Conservation/restoration	☐ Oil and gas	☐ Urban and rural development
☐ Forestry		
☐ Other:		

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Description of the Proposed Development *(continued)*

14 What are you planning to do? Briefly describe all the project components you are proposing in or near water. *(limit of 400 characters)*

Have you considered and incorporated all options for redesigning and relocating your project to avoid negative impacts to fish and fish habitat? ◉ Yes ○ No

If yes, include in description.

Relocate barge ramp facility by constructing causeway to deep water and installing piling and ramp.

-Footpring minimized
-Avoids filling Bear River
-Dredging not required
-Avoid estuary

15 How are you planning to do it? Briefly describe the construction materials, methods and equipment that you plan to use. *(limit of 400 characters)*

Have you considered and incorporated all best practices and mitigation measures recommended in relevant guidelines to avoid negative impacts to fish and fish habitat? ◉ Yes ○ No

If yes, include a description in 21

Gravel and rip-rap extension of existing causeway by excavator, dump trucks, or other land based equipment. Pile driving rig used to install all steel piles - vibro if possible, impact if necessary.

16 Include a site plan (figure/drawing) showing all project components in and near water.

Are details attached? ◉ Yes ○ No

17 Implementation schedule and proposed project timing:

What is the start and end date for the proposed project: YYYY/MM/DD 2012/09/01 *to* YYYY/MM/DD 2013/03/15

What is the schedule of all proposed work activities? *(limit of 300 characters)*

Begin placing fill in fall 2012.

18 Will you follow the appropriate Timing Windows for all activities below the High Water mark?

◉ Yes ○ No

If no, why not? *(limit of 300 characters)*

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Description of the Proposed Development *(continued)*

19 **Indicate the extent of the area (in square metres) that your project will affect in and/or near water.** Identify if areas would be temporarily and/or permanently affected. *(limit of 400 characters)*

See attached Habitat Balance Sheet.

20 **Will you be withdrawing or discharging water?** ○ Yes ◉ No

If so, identify your water source and describe the volume and rates. *(limit of 400 characters)*

Description of the Proposed Fish and Fish Habitat Protection Measures

21 **Outline all the measures and practices that you will apply to avoid and/or minimize impacts to the aquatic environment. List appropriate Operational Statements and/or Best Management Practices.** *(limit of 900 characters)*

-Follow BMPs for Pile Driving (BC Marine and Pile Driving Contractors Association)
-Vibratory hammer used if driving conditions permit
-Bubble curtain used as required
-Contractor to have spill management plan in place, including spill kit
-Infill placed during periods of low tide
-Heavy equipment to be kept out of water
-Heavy equipment operate within project footprint only
-No grounding of barges or equipment on foreshore
-Environmental monitoring as required
-Minimize filling during extreme rainfall events
-Cover any storage areas
-Do no leave pile tops uncovered
-Inspect equipment to ensure in good working order, clean and free of leaks

22 I, Warren Appleton (print name) certify that the information given on this form is to the best of my knowledge correct and completed.

2012/07/11
Date (YYYY/MM/DD)

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the *Fisheries Act* for the purpose of administering the fish habitat protection provisions of the *Fisheries Act*. Personal information will be protected under the provisions of the *Privacy Act* and will be stored in the Personal Information Bank number DFO PPU 080. Under the provisions of the *Privacy Act*, individuals have a right to, and on request shall be given access to any personal information about them contained in a personal information bank. Instructions for obtaining personal information are contained in the Government of Canada's Info Source publications available at www.infosource.gc.ca or in Government of Canada offices. Information other than "personal" information may be accessible or protected as required by the provision of the *Access to Information Act*.

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BALANCED ENVIRONMENTAL

July 11, 2012

Balanced File No.: 5397-R-02.1

Brad Moffat c/o
Arctic Construction
11421 Alaska Road
Fort St. John, B.C.
V1J 6N2

Re: ***Biophysical Survey Results for Barge Ramp Relocation Project, Stewart, British Columbia***

Brad,

As you are aware, Balanced Environmental Services Inc. (Balanced) was contracted by Arctic Construction Ltd. (ACL) to collect baseline biophysical information in support of reactivating a barge ramp at the existing Cassiar dock in Stewart, British Columbia (see Drawing 5397-D-01.2 – Location Map). The biophysical information will be used to assess the impacts of the proposed project and to initiate discussions with Fisheries and Oceans Canada (DFO), which will likely lead to a *Fisheries Act* Authorization for the project.

On May 1 and 2, 2012, Balanced performed field visits to collect the biophysical information, which included above and below water surveys. The above water survey was conducted by a team of biologists (Warren Appleton, Duncan Clark, and Kurt Fehr) and included a general survey of the area from above the high water mark to the low tide at the time of survey (2.0m chart datum). Biophysical information was collected using a dGPS and a Total Station, which was also used to collect topographic data.

The below water survey was conducted by a team of WorkSafeBC certified SCUBA divers and involved making general observations on species presence and abundance, as well as mapping the transitions between different substrate types relative to local infrastructure. A hydrographic survey using a Digital Depth Sounder and dGPS was also performed.

Biophysical, bathymetric, and topographic information collected during the field visits are available on the attached Balanced drawings 5397-D-01.1 (Location Map), 5397-D-02.1 (Biophysical Conditions), and the attached File No. 5397-E-01.1 (Table 1 – Observed Biota) and are summarized below. All elevations are in metres and related to chart datum via the Stewart Harmonic Station (CHS) using Tides and Currents Pro v. 3.5.107.

Substrate Conditions – See Drawing 5397-D-02.2

The existing causeway is a disturbed site primarily consisting of gravel and deteriorating asphalt with some areas of shallow soil within the vicinity of the tank farm containment area at the north end of the survey area. The edge of the causeway consists of a riprap armoured slope with angular rock ranging from 64mm to 700mm in diameter, with the majority of rock being less than 300mm in diameter. The riprap slope runs from the top of bank (7.4 to 7.8 metres chart datum) to an elevation of 3.0m chart datum. At the toe of the riprap slope the substrate transitions to mud with sparse woody debris on the west side of the causeway and to primarily pebble substrate with patches of sand and cobble on the south of the causeway. The mud substrate extends south to an approximate elevation of 1.0m chart datum where it transitions to pebble, which continues to subtidal depths. A short riprap berm separates a boat launch ramp from the neighbouring Bear River.

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Biological Conditions – See Attached Files 5397-D-02.2 and 5397-E-01.2

The majority of upland asphalt and gravel habitat was devoid of any vegetation. A narrow 1 to 2 metre fringe of vegetation was present along the top of the riprap slope which consisted of grasses and sparse Willow (*Salix sp.*) and Sitka Alder (*Alnus crispa ssp. sinuata*) shrubs. A greater variety of vegetation was present at the north end of the survey area within the vicinity of the tank farm containment area, including some trees (Cottonwood, Hemlock, and Sitka Spruce). Dunegrass (*Elymus mollis*) and Tufted Hairgrass (*Deschampsia cespitosa*) were patchily distributed amongst the riprap at the northwest end of the survey area. Aquatic vegetation was limited to Rockweed (*Fucus sp.*) and Green Alga (*Ulva intestinalis*) which was most abundant on the riprap substrate. Colonial Diatoms and Green Alga were also observed at less than 25% coverage on intertidal pebble. Observed invertebrate species included Tanner Crabs (*Chionoecetes bairdi*) on subtidal pebble and unidentified shrimp within the intertidal mud habitat. No critical habitat organisms were visible such as Eelgrass (*Zostera marina*), Kelp (*Laminarians*), Pickleweed (*Salicornia* spp.) or Sedges (*Carex spp.*). Overall, colonization by visible organisms was sparse.

No finfish were observed during the biophysical survey. Visibility during the biophysical survey varied from 0.3m above the low water mark to 3 metres below the low water mark.

A review of the online Fish Information Summary System database on June 7, 2012 (attached) stated that the following fish have been observed in the Bear River: Dolly Varden, Steelhead, Sculpins, Chinook Salmon, Chum Salmon, Coho Salmon, Sockeye Salmon, Pink Salmon, Lamprey, Longnose Dance, Mountain Whitefish, Rainbow Trout, and Chub. However, local knowledge suggests that the area is primarily Coho habitat.

No species at risk were observed during the biophysical survey.

Impact Areas – See Drawing 5397-D-05.1

The proposed relocation of the barge ramp is shown on drawings #12039-1. The existing barge ramp location has become filled in with aggregate from the Bear River and cannot be used. The proposed new location will allow barges to offload at all tide levels without grounding on the foreshore. The impacts to Fish and Fish Habitat from this work relate to the net loss of intertidal substrate and water column from the fill area.

The fill area has a **footprint of approximately 12,470m^2** of which 6,279 m^2 will be raised above the high water mark (7.6m chart datum). The fill area will cover an existing riprap slope with is approximately 50% rockweed (on the lower half) and 50% bare riprap (on the upper half). Beyond the riprap, half of the area filled is pebble substrate with patches of sand and cobble and is located in an area formally used for barge loading/unloading. This area is primarily bare with less than 25% coverage of diatoms (*Bacillariophyceae*). To the east, the substrate under the proposed fill area transitions to mud at the active booming ground. Mud substrate cover represents less than a 10th of the fill area. This area is currently covered by log booms that ground out during periods of low tide and is devoid of any visible organisms. According to a local, the area has been reworked by logging operations and should be pebble very near the surface. Minor amounts of woody debris are present.

Post construction, the causeway will have a riprap slope surrounding the facility. The riprap area within the growing range of Rockweed (2.3m to 4.4m) is expected to be over 3 times as large as that of the existing causeway. The fill area is expected to result in a loss of water column of approximately 70,000 cu.m of water column. A complete description of the fill area impacts are described below in the Habitat Balance Sheet.

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Table 1. Habitat Balance Sheet for Fill Area Permanent Impacts

Zones	Location	Elevation	Substrate	Biota	Pre	Post	Net
A	Booming Grounds	Subtidal	Pebble	Crabs	655	0	-655
B	Old Ramp Area	Intertidal	Pebble	Diatoms	9214	0	-9214
C	Booming Grounds	Intertidal	Mud	Unvegetated	1078	0	-1078
D	Causeway	Intertidal	Riprap	Rockweed	838	3408	2570
E	Causeway	Intertidal	Riprap	Unvegetated	685	2783	2098
Total					**12470**	**6191**	**-6279**

All areas are in square metres.

The barge ramp has an area of 337 m^2. There are no photosynthetic organisms within the footprint of these structures. The substrate is entirely subtidal and consists of pebble. See the attached species list for a complete list of subtidal species observed.

Summary and Moving Forward

As the project requires a significant amount of fill within marine waters, even though no critical habitat will be lost, we expect that this project will require Authorization pursuant to the *Fisheries Act*. A meeting with Fisheries and Oceans Canada is proposed to present the project and initiate the project review process necessary to secure a *Fisheries Act* Authorization and determine whether any further mitigation is required.

Sincerely,
BALANCED ENVIRONMENTAL SERVICES INC.

Warren Appleton, RPBio
Project Biologist

WA/xie

attachment

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BALANCED ENVIRONMENTAL

File No. 5397-E-01.2
July 11, 2012

TABLE 1

OBSERVED BIOTA
BARGE RAMP RELOCATION PROJECT
STEWART, BRITISH COLUMBIA

Date of survey: May 1 and 2, 2012

Common Name	Scientific Name	Chart Datum Range (m)		Abundance*	
		Upper	Lower	Description	Method
Barnacles					
Acorn	*Balanus glandula*	1.0	<-20.0	Common	PAC
Brown Alga					
Rockweed	*Fucus gardneri*	4.4	2.3	Common	PAC
Crabs					
Tanner	*Chionoecetes bairdi*	1.0	<-20.0	Sparse	IOT
Diatoms					
Colonial	*Class: Bacillariophyceae*	2.5	0.0	Sparse	PAC
Green Alga					
Green String Lettuce	*Ulva intestinalis*	5.0	2.0	Few	PAC
Marsh Plants					
Dunegrass	*Elymus mollis*	7.5	6.0	Rare	PAC
Seaside Plantain	*Plantago maritima*	4.4	4.4	Rare	PAC
Tufted Hairgrass	*Deschampsia cespitosa*	6.0	4.4	Rare	PAC
Riparian Plants					
Black Cottonwood	*P. balsamifera ssp. trichocarpa*	>7.5	>7.5	Rare	PAC
Blueberry	*Vaccinium sp.*	>7.5	>7.5	Rare	PAC
Grass	*Various spp.*	>7.5	>7.5	Sparse	PAC
Salal	*Gaultheria shallon*	>7.5	>7.5	Rare	PAC
Scouring-rush	*Equisetum hyemale*	>7.5	>7.5	Rare	PAC
Sitka Alder	*A. crispa ssp. sinuata*	>7.5	>7.5	Sparse	PAC
Sitka Spruce	*Picea sitchensis*	>7.5	>7.5	Rare	PAC
Western Hemlock	*Tsuga heterophylla*	>7.5	>7.5	Rare	PAC
Willow	*Salix sp.*	>7.5	>7.5	Sparse	PAC
Thimbleberry	*Rubus parviflorus*	>7.5	>7.5	Rare	PAC

***PAC = Percent Aerial Coverage, IOT = Individuals on Transects**

*Abundance Category	Percent Aerial Coverage (PAC)	Individuals on Transects or Tracklines (IOT)	Individuals per Square Metre (IPM)
Rare	<5%	1	1
Sparse	5-25%	2-4	2-4
Few	26-50%	5-10	5-10
Common	51-75%	11-30	11-30
Abundant	>75%	>30	>30

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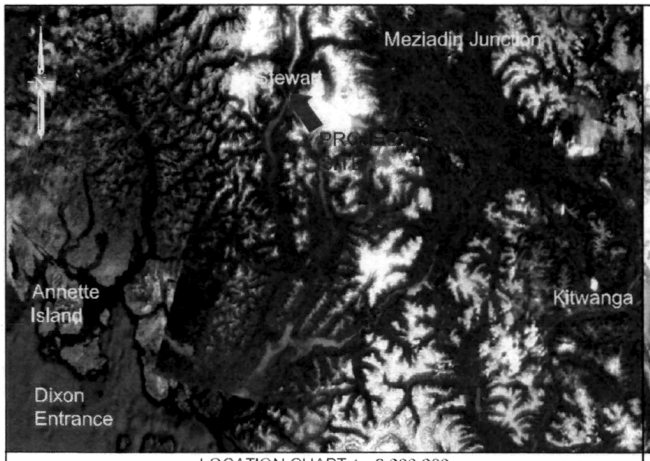
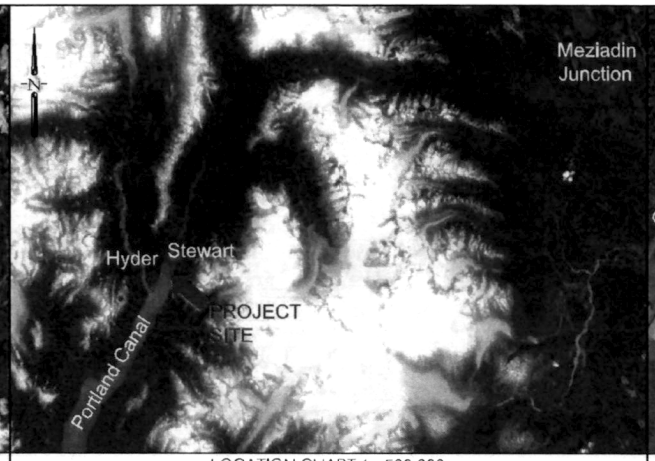
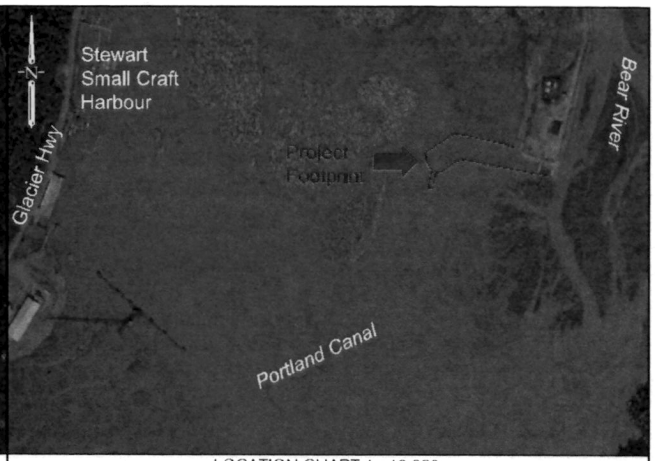


LOCATION CHART 1 : 2,000,000



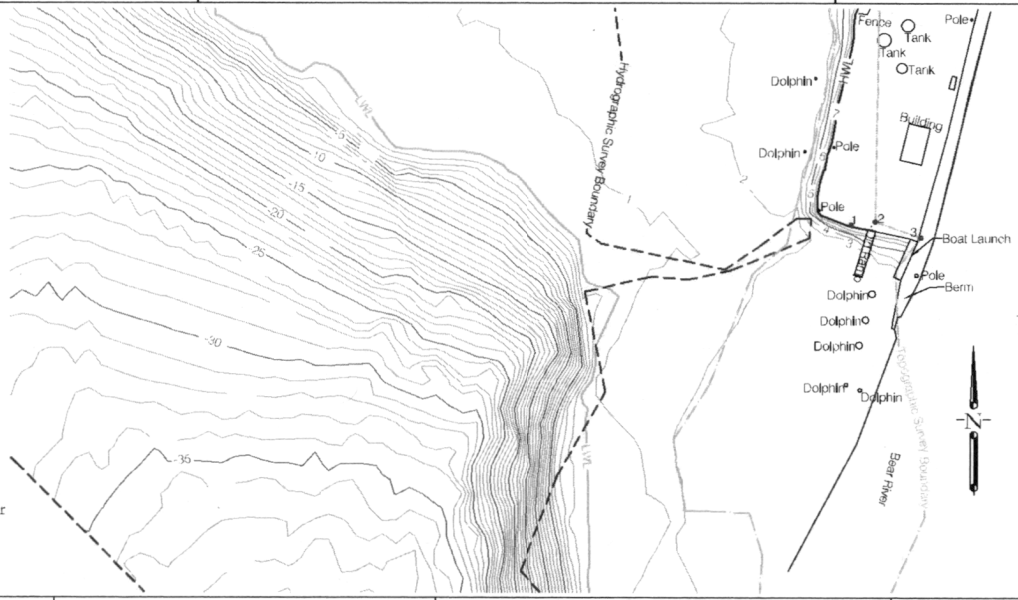
LOCATION CHART 1 : 500,000



LOCATION CHART 1 : 10,000

DRAWING NOTES

- Drawing notes apply to Drawings 5397-D-01.1 and 5397-D-02.1.
- Not an As-Built drawing.
- All elevations are in metres and related to chart datum via the Stewart Harmonic Station (CHS) Tides and Currents Pro v. 3.5.107 accurate to +/- 0.3m.
- Hydrographic, topographic and biophysical surveys were conducted on May 1 and 2, 2012.
- Intertidal biophysical location information was collected using either a total station or dGPS.
- General underwater biophysical information was collected by making a series of dives throughout the survey area. Observations were located relative to existing structures onsite.
- The information, including elevation and biophysical data, presented on the drawings may vary from current conditions due to the passage of time or seasonal changes in substrate and biota.
- The data presented on the drawings represents, in general terms, the substrate and biota types:
- Contour data between the limits of the hydrographic and topographic surveys is extrapolated.
- According to Cambira Gordon 2011, the high water mark for the site is approximately 7.67m chart datum.
- To convert to Geodetic, subtract 3.713 metres.



LEGEND

- Existing Structures
- 1.0m Contour
- 5.0m Contour
- Low Water (LWL) (0m Chart Datum)
- High Water (HWL) (7.67m Contour)
- Hydrographic Survey Boundary
- Topographic Survey Boundary
- Survey Reference Point

SURVEY REFERENCE POINTS

- Reference Point 1
  - Canada Hydrographic Services # 85 79600
  - Tide & Currents: 7.84m Chart Datum
- Reference Point 2
  - Observation Monitoring Well
- Reference Point 3
  - Tide Program: 7.84m Chart Datum
  - BC Legal Survey Monument #2002 SL 7318 WT 4.446 509
  - Tides & Currents: 6.99m Chart Datum

50 0 150
Distance in Metres

Ref. No.	REFERENCE

Client
ARCTIC CONSTRUCTION
11421 Alaska Road
Fort St. John, BC
V1J 6N2

Author
BALANCED ENVIRONMENTAL

Checked by	WA
Drawn by	DC
Date	July 11, 2012
Scale	1:3500
Inspectors	WA,DC, KF
Paper	11 x 17

PROJECT
LOCATION MAP
BARGE RAMP RELOCATION PROJECT, STEWART, BRITISH COLUMBIA

DWG. No. 5397-D-01.2

BALANCED ENVIRONMENTAL SERVICES INC.

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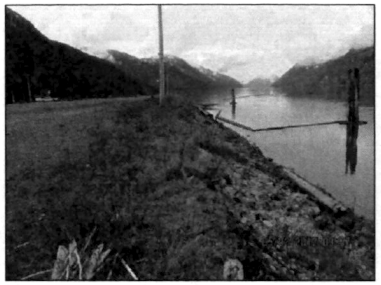

Photo 1. A narrow fringe of grasses and shrubs was present along the top of the causeway's riprap slope.

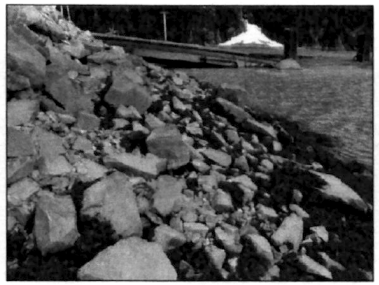

Photo 2. Green algae and rockweed were common on the riprap east of the Bear River.

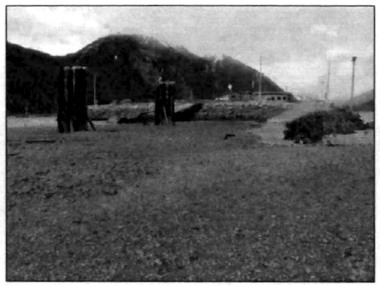

Photo 3. View of riprap slope, berm, and pebble intertidal zone south of the causeway and boat launch.

Photo 4. Close-up of intertidal pebble with less than 25% coverage of green algae and diatoms.

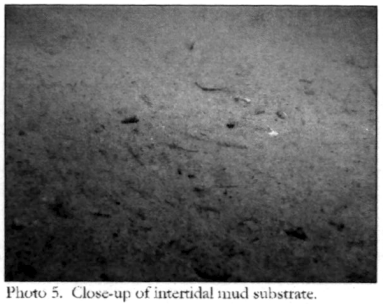

Photo 5. Close-up of intertidal mud substrate.

LEGEND

- Existing Structures
- 1.0m Contour
- 5.0m Contour
- Low Water (LWL) (0m Chart Datum)
- High Water (HWL) (7.67m Contour)
- Riprap (Angular Rock >64mmØ)
- Pebble (2mm to 64mmØ)
- Mud (<0.0625mmØ)
- Cob Cobble (64mm to 255mmØ)
- S Sand (0.0625mm to 2mmØ)
- Wd Woody Debris
- Photo
- Crb Crabs
- Dia Diatoms
- Unvl Dunegrass
- Bar Barnacles
- Grasses & Shrubs
- Ulv Green Algae
- Msh Marsh Plants
- Rkw Rockweed
- Reference Point

DRAWING NOTES

- For a complete list of drawing notes, see Drawing 5397-D-01.1 - Location Map.
- Intertidal biophysical information was collected using a total station or dGPS.
- General underwater biophysical information was collected by making a series of dives throughout the survey area. Observations were located relative to existing structures onsite.
- The information, including elevation and biophysical data, presented on the drawings may vary from current conditions due to the passage of time or seasonal changes in substrate and biota.
- The data presented on the drawings represents, in general terms, the substrate and biota types.

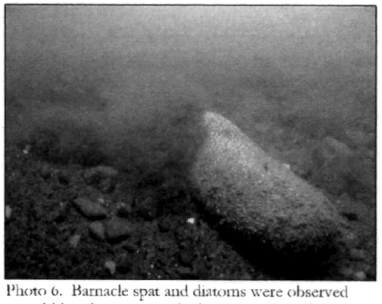

Photo 6. Barnacle spat and diatoms were observed on cobble substrate near the low water line. Pebble substrate was typically bare.

Photo 7. Tanner crab on subtidal pebble substrate with silty sand.

Ref. No.	REFERENCE

Client
ARCTIC CONSTRUCTION
11421 Alaska Road
Fort St. John, BC
V1J 6N2

Author
BALANCED ENVIRONMENTAL

Checked by	WA
Drawn by	DC
Date	July 11, 2012
Scale	1:2800
Inspectors	WA,KF,DC
Paper	11 x 17

PROJECT
BIOPHYSICAL CONDITIONS
BARGE RAMP RELOCATION PROJECT,
STEWART, BRITISH COLUMBIA

DWG. No. 5397-D-02.2

BALANCED ENVIRONMENTAL SERVICES INC.

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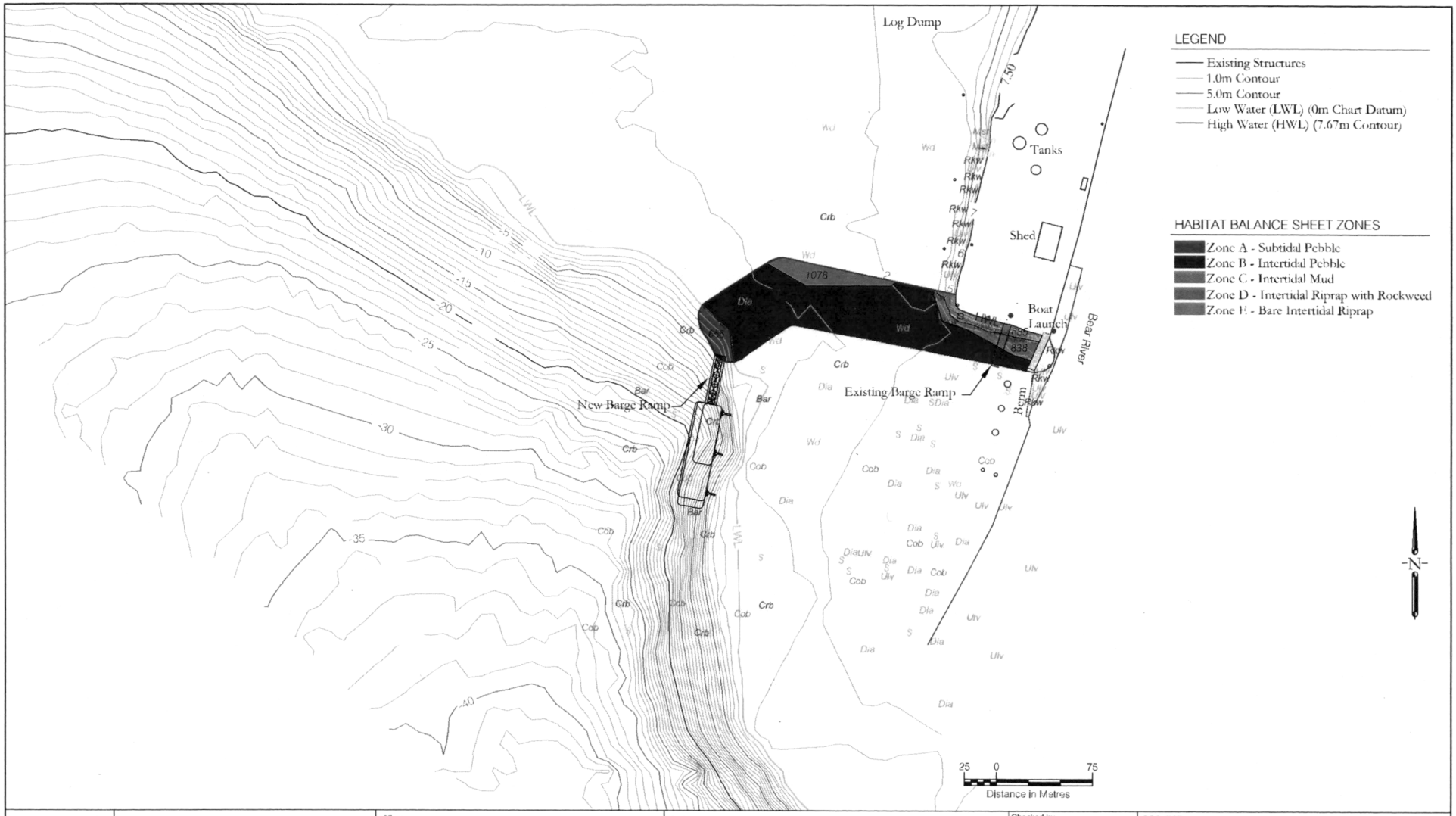

Ref. No.	REFERENCE

Client
ARCTIC CONSTRUCTION
11421 Alaska Road
Fort St. John, BC
V1J 6N2

Author
BALANCED ENVIRONMENTAL

Checked by	XIE
Drawn by	WA
Date	July 11, 2012
Scale	1:2800
Inspectors	WA,KF,DC
Paper	11 x 17

PROJECT
IMPACT AREAS,
BARGE RAMP RELOCATION PROJECT,
STEWART, BRITISH COLUMBIA

DWG. No. 5397-D-05.1

BALANCED ENVIRONMENTAL SERVICES INC.

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							zone					
AMOR DE COSMOS CREEK	1	TSB	Threespine Stickleback	NOT SPECIF	Fluvial	Wild indigenous	REA Rearing location	092K04	2063	P		(MJL004, 01-FEB-1
AMOR DE COSMOS CREEK	1	WST	Steelhead (Winter-run)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092K05	2014	U		(HQ2059, 01-FEB-2
AMOR DE COSMOS CREEK	1	WST	Steelhead (Winter-run)	NOT SPECIF	Not Specif	Not Specified	REA Rearing location	092K05	2014	U		(HQ2059, 01-FEB-2
BEAR RIVER	2	DV	Dolly Varden	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092K14	337194	P		(RABSVY-176317,
BEAR RIVER	2	DV	Dolly Varden	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092K14	341450	P		(RABSVY-183270,
BEAR RIVER	2	DV	Dolly Varden	NOT SPECIF	Resident	Wild indigenous	OBL Fish observed at this point or zone	092K14	3	U		(1RABVIC, 01-APR
BEAR RIVER	2	DV	Dolly Varden	NOT SPECIF	Resident	Wild indigenous	OBL Fish observed at this point or zone		268876	W		(2FBSRY, 01-JAN-'
BEAR RIVER	2	SP	Unidentified Species	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092K14	337194	P		(RABSVY-176317,
BEAR RIVER	2	SP	Unidentified Species	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092K14	341450	P		(RABSVY-183270,
BEAR RIVER	2	ST	Steelhead	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		268876	W		(STLHD-SUM, no d
BEAR RIVER	6	C	Minnow (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W		(4D-165, 01-JAN-19
BEAR RIVER	6	CAS	Prickly Sculpin	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W		(4D-165, 01-JAN-19
BEAR RIVER	6	CBC	Chub (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W		(4D-165, 01-JAN-19
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P		(RABSVY-174464,
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P		(RABSVY-174465,
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D07	22	P		(HQ1338, 01-SEP-1
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this		212120	W		(SC-537, 01-JAN-19 (SC-875, 01-JAN-19

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							point or zone							
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	094D02	1	U	094D02	2	D	(4D-102, no date) (4D-92, no date)
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	094D07	3	U	094D07	4	D	(4D-102, no date) (4D-92, no date)
BEAR RIVER	6	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location		212120	W				(4D-102, no date) (4D-92, no date)
BEAR RIVER	6	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	103P13	6	P				(SISSM01, 01-JAN-
BEAR RIVER	6	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	103P13	4	U	103P13	5	D	(SISSM01, 01-JAN-
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P				(RABSVY-174464,
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P				(RABSVY-174465,
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		212120	W				(4D-92, no date)
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	103P13	7	P				(SISSM01, 01-JAN-
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	104A04	7	P				(SISSM01, 01-JAN-
BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	103P13	4	U	103P13	5	D	(SISSM01, 01-JAN-

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BEAR RIVER	6	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	104A04	4	U	104A04	3	D	(SISSM01, 01-JAN-
BEAR RIVER	6	DV	Dolly Varden	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W				(SC-383, 01-JAN-1
BEAR RIVER	6	L	Lamprey (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W				(4D-165, 01-JAN-1
BEAR RIVER	6	LNC	Longnose Dace	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	094D07	2	P				(SC-875, 01-JAN-1
BEAR RIVER	6	LNC	Longnose Dace	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W				(4D-165, 01-JAN-1 (SC-537, 01-JAN-1
BEAR RIVER	6	MW	Mountain Whitefish	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W				(SC-537, 01-JAN-1
BEAR RIVER	6	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P				(RABSVY-174464,
BEAR RIVER	6	PK	Pink Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P				(RABSVY-174465,
BEAR RIVER	6	RB	Rainbow Trout	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P				(RABSVY-174464,
BEAR RIVER	6	RB	Rainbow Trout	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P				(RABSVY-174465,
BEAR RIVER	6	RB	Rainbow Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	094D07	22	P				(HQ1338, 01-SEP-1
BEAR RIVER	6	RB	Rainbow Trout	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		212120	W				(4D-165, 01-JAN-1 (4D-22, no date) (4D-92, no date)
BEAR RIVER	6	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P				(RABSVY-174464,
BEAR RIVER	6	SK	Sockeye Salmon	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P				(RABSVY-174465,
BEAR	6	SK	Sockeye	NOT	Anadromous	Not Specified	OBL Fish observed at this		212120	W				(4D-92, no date)

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RIVER			Salmon	SPECIF			point or zone							
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336131	P				(RABSVY-174464,
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone	094D02	336132	P				(RABSVY-174465,
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	OBL Fish observed at this point or zone		212120	W				(SC-383, 01-JAN-1
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	SPL Spawning location	094D02	5	U	094D02	6	D	(4D-102, no date)
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	094D02	1	U	094D02	4	D	(4D-102, no date)
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Anadromous	Not Specified	SPM Major spawning location	094D07	3	U	094D07	5	D	(4D-1, no date) (4D-102, no date) (4D-22, no date)
BEAR RIVER	6	ST	Steelhead	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone		295181	W				(STLHD-SUM, no d
BEDWELL RIVER	1	ACT	Cutthroat Trout (Anadromous)	NOT SPECIF	Anadromous	Wild indigenous	OBL Fish observed at this point or zone		319553	W				(14-5, no date)
BEDWELL RIVER	1	CAL	Coastrange Sculpin (formerly Aleutian Sculpin)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343292	P				(24-9, 01-JAN-1989
BEDWELL RIVER	1	CAL	Coastrange Sculpin (formerly Aleutian Sculpin)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343296	P				(24-9, 01-JAN-1989
BEDWELL RIVER	1	CAS	Prickly Sculpin	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343292	P				(24-9, 01-JAN-1989
BEDWELL RIVER	1	CAS	Prickly Sculpin	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343296	P				(24-9, 01-JAN-1989
BEDWELL RIVER	1	CAS	Prickly Sculpin	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	343300	P				(24-9, 01-JAN-1989
BEDWELL RIVER	1	CC	Sculpin (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	63	P				(24-21, 01-JAN-199
BEDWELL RIVER	1	CC	Sculpin (General)	NOT SPECIF	Not Specif	Not Specified	OBL Fish observed at this point or zone	092F05	64	P				(24-21, 01-JAN-199
							OBL Fish observed							

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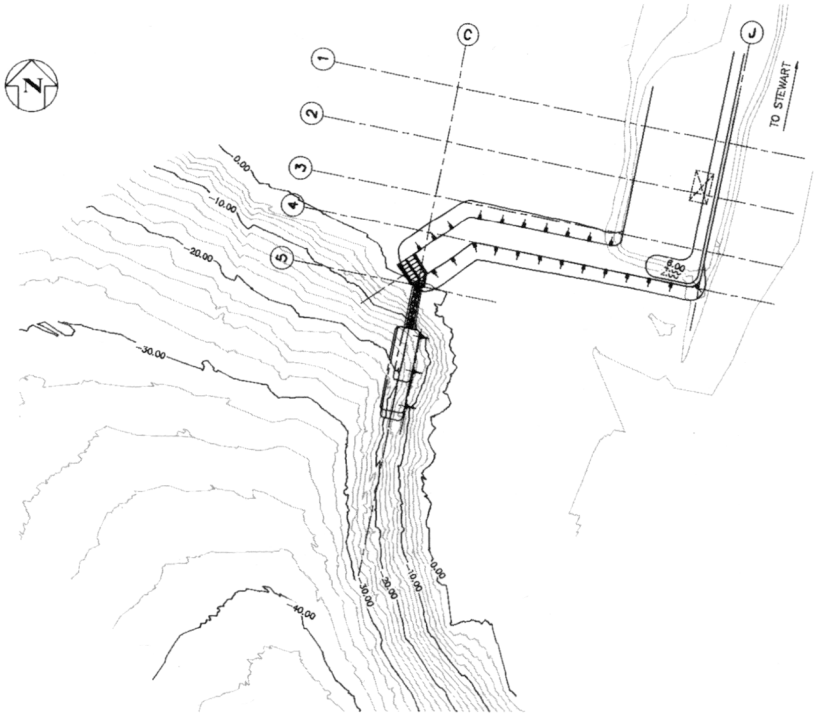

SITE PLAN
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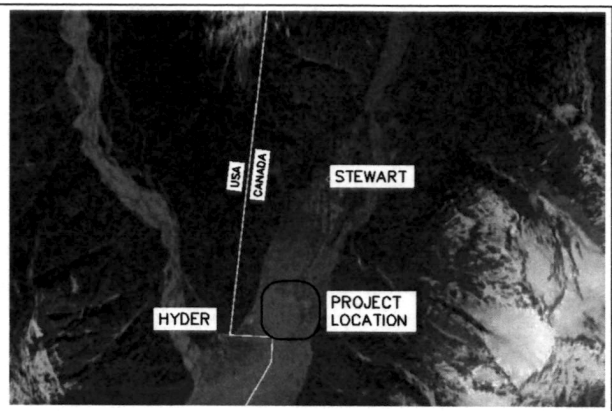

KEY PLAN
N.T.S.

REV.	DESCRIPTION	DATE	BY
A			
B			
C			
D			
E			
F			
G			
H			

DATE	13/04/12
SCALE	AS NOTED
DRAWN BY	J.P.
DESIGN BY	D.L.
CHECKED BY	D.M.
APPROVED	
PROJECT No.	12039
REV.	-
DRAWING No.	1

CLIENT
STEWART WORLD PORT

PROJECT
STEWART BARGE RAMP

DRAWING TITLE
KEY PLAN AND SITE PLANS

ALL-SPAN
ENGINEERING & CONSTRUCTION LTD.
#201 – 7198 VANTAGE WAY
DELTA, B.C. CANADA V4G 1K7
E-mail: all-span@telus.net
PHONE: (604) 940-2212 FAX: (604) 940-1516

CADFILE: 12039-1

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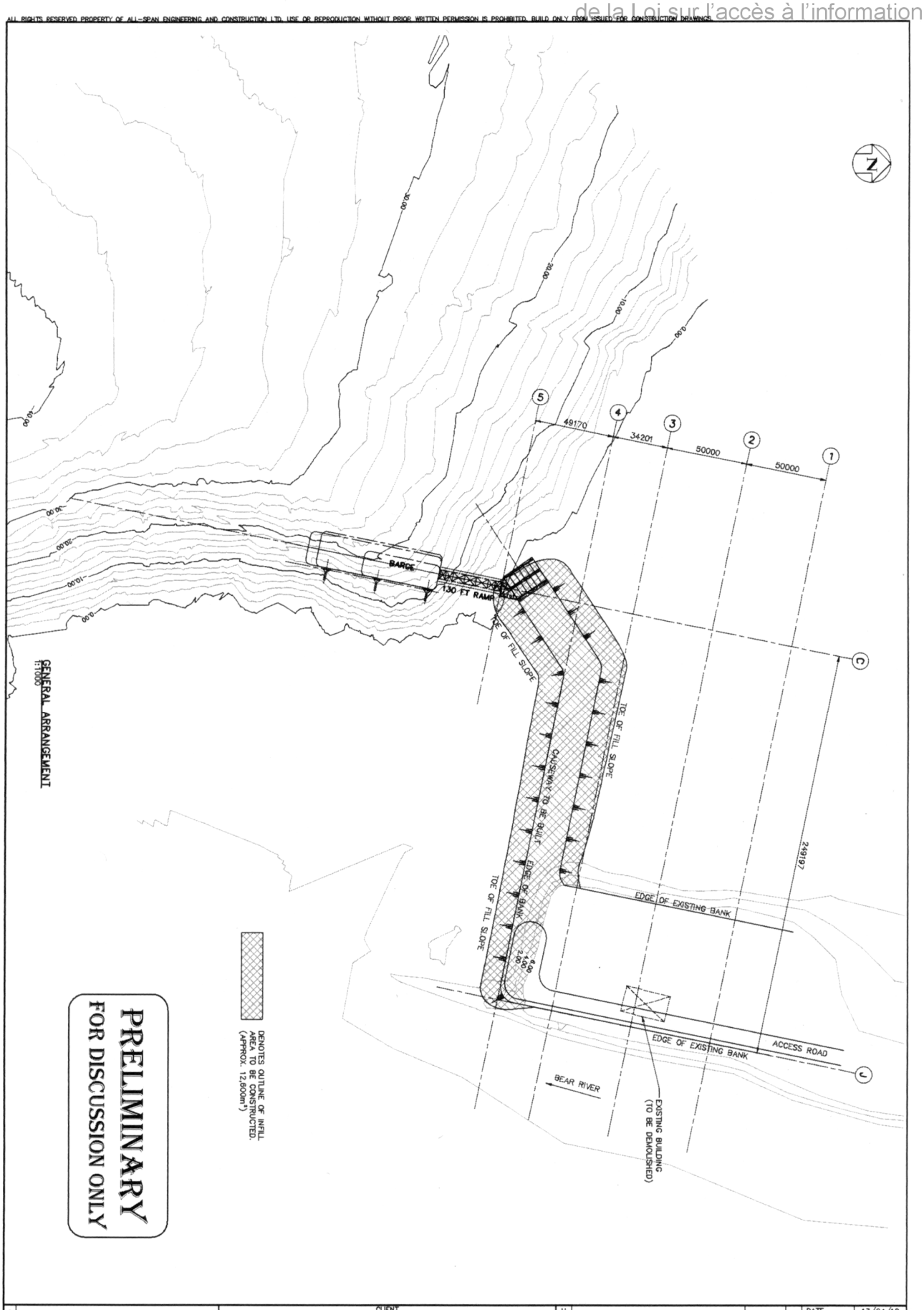

ALL-SPAN ENGINEERING & CONSTRUCTION LTD.	CLIENT: STEWART WORLD PORT	H				DATE	13/04/12
#201 – 7198 VANTAGE WAY, DELTA, B.C. CANADA V4G 1K7		G				SCALE	AS NOTED
E-mail: all-span@telus.net	PROJECT: STEWART BARGE RAMP	F				DRAWN BY	J.P.
PHONE: (604) 940-2212 FAX: (604) 940-1516		E				DESIGN BY	D.L.
		D				CHECKED BY	D.M.
		C				APPROVED	
	DRAWING TITLE: GENERAL ARRANGEMENT	B				PROJECT No.	12039 REV.
		A				DRAWING No.	2 –
		REV.	DESCRIPTION	DATE	BY		

CAD FILE: 12039-1

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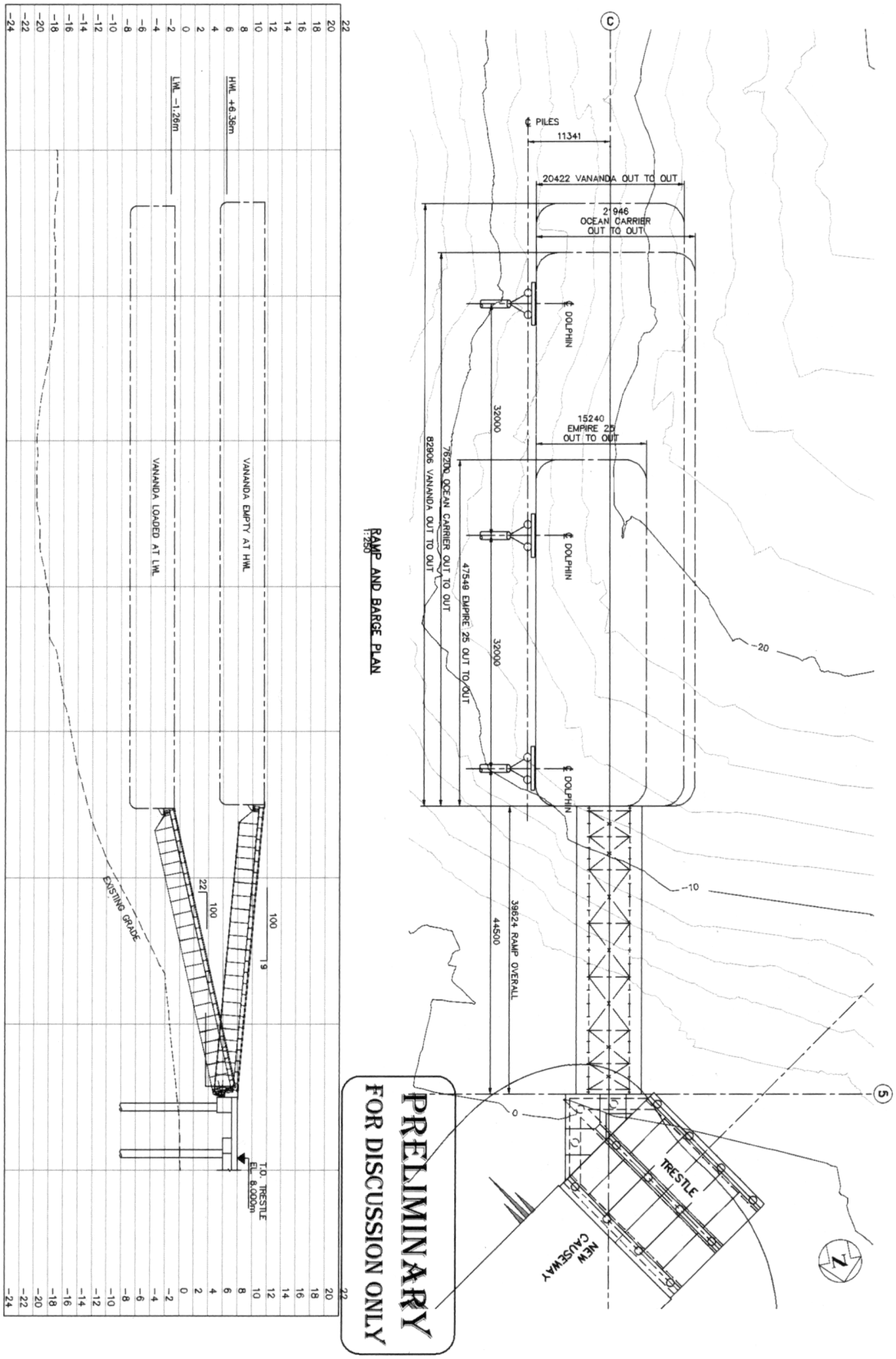

ALL-SPAN ENGINEERING & CONSTRUCTION LTD.	CLIENT: STEWART WORLD PORT	H			DATE	13/04/12
#201 – 7198 VANTAGE WAY		G			SCALE	AS NOTED
DELTA, B.C. CANADA V4G 1K7	PROJECT: STEWART BARGE RAMP	F			DRAWN BY	J.P.
E-mail: all-span@telus.net		E			DESIGN BY	D.L.
PHONE: (604) 940-2212 FAX: (604) 940-1516		D			CHECKED BY	D.M.
		C			APPROVED	
	DRAWING TITLE: RAMP & BARGE PLAN & PROFILE	B			PROJECT No.	12039 REV.
		A			DRAWING No.	4 –
		REV.	DESCRIPTION	DATE BY		

CADFILE: 12039-1

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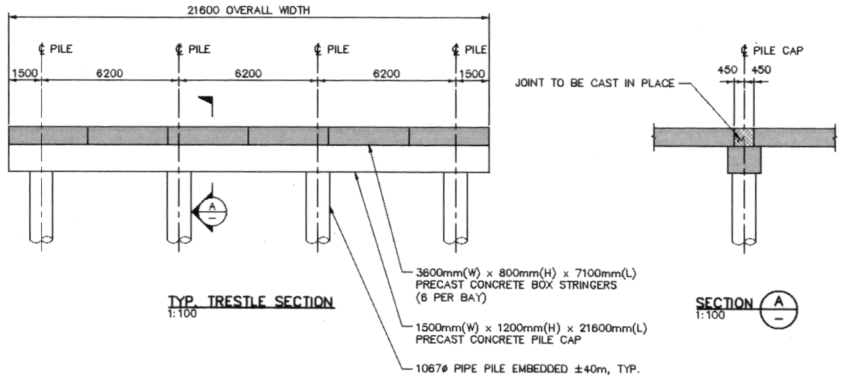
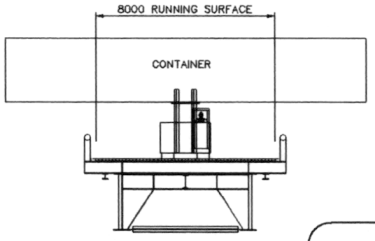


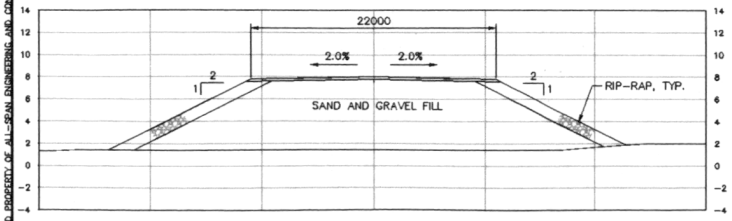
TYP. TRESTLE SECTION
1:100

SECTION A
1:100



TYP. RAMP SECTION
1:100

PRELIMINARY
FOR DISCUSSION ONLY



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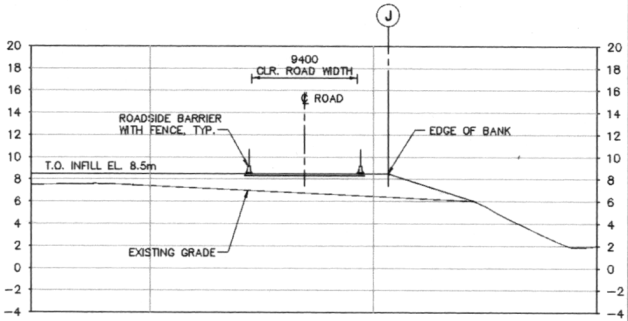

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REV.	DESCRIPTION	DATE	BY
A			
B			
C			
D			
E			
F			
G			
H			

DATE	13/04/12
SCALE	AS NOTED
DRAWN BY	J.P.
DESIGN BY	D.L.
CHECKED BY	D.M.
APPROVED	
PROJECT No.	12039 REV.
DRAWING No.	6 –

CLIENT
STEWART WORLD PORT

PROJECT
STEWART BARGE RAMP

DRAWING TITLE
MISC. DETAILS

ALL-SPAN
ENGINEERING & CONSTRUCTION LTD.
#201 – 7198 VANTAGE WAY
DELTA, B.C. CANADA V4G 1K7
E-mail: all-span@telus.net
PHONE: (604) 940-2212 FAX: (604) 940-1516

CADFILE: 12039-1

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BRITISH COLUMBIA

Ted Pickell, Chief Executive Officer
Stewart World Port
11421 Alaska Road
Fort St John BC V1J 6N2

tp@stewartworldport.com

Reference: 204277

Dear Ted Pickell:

Re: Northwest Port Development

The Province recognizes this is a time of unprecedented demand for British Columbia resources from global markets, and as articulated in the ministry's recently released *Pacific Gateway Transportation Strategy 2012-2020*, the provincial government and its partners see an opportunity for a greater than 300 per cent increase in trade volume for metals and minerals by 2020, with much of the growth taking place in the Northwest.

To capitalize on this demand, the Province is investing in projects such as the Northwest Transmission Line, which enables the future development of a significant number of mines in northwestern B.C. Our analysis supports the need for additional terminal capacity to accommodate increasing production of mineral concentrate in the region.

The provincial government is supportive of developing infrastructure of the nature being proposed by Stewart World Port at the Port of Stewart.

Sincerely,

Dave Byng
Chief Operating Officer

Ministry of Transportation and Infrastructure

Office of the Chief Operating Officer

Mailing Address:
PO Box 9850 Stn Prov Govt
Victoria BC V8W 9T5

Telephone: 250 387-7671
Fax: 250 387-6431

Location:
5B 940 Blanshard Street
Victoria BC V8W 3E6

www.gov.bc.ca/tran

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Legislative Office:
East Annex, Parliament Buildings
Victoria, B.C. V8V 1X4
Phone: 250 952-6784
Fax: 250 387-9100
e-mail: pat.pimm.mla@leg.bc.ca

Constituency Office:
10104 - 100th Street
Fort St. John, B.C. V1J 3Y7
Phone: 250 263-0101
Fax: 250 263-0104
website: www.patpimmmla.bc.ca

Province of British Columbia

Legislative Assembly

Pat Pimm, M.L.A.
Peace River North
Parliamentary Secretary for Natural Gas Initiative

May 30, 2012

To Whom it May Concern:

Re: Arctic Construction Ltd. – Ted Pickell, CEO

Please consider this letter as my formal support for Ted Pickell and Arctic Construction Ltd. for their proposed deep sea dock project at the port in Stewart, BC.

I have known Mr. Pickell for well over 40 years. He has been a pillar in the Northeast all of that time and continues to be today. I have had the opportunity to discuss the proposed project with him. This project is to build a dock with the capability of loading and unloading ocean-going vessels, carrying 70-80,000 ton loads. The location of this project is very strategic as Northern BC ports are typically 1 ½ -2 days closer to Asian ports. There is no port north of Vancouver capable of handling this type of load, and no dock to accommodate these types of ships.

I am convinced that this project will be an excellent addition to the province as the mining industry in BC continues to grow. The need for additional port capacity, with the ability to receive and export concentrates will become even more important. A project of this magnitude will help drive the economy and create good paying jobs for British Columbian families for years to come.

Sincerely,

Pat Pimm, MLA
Peace River North

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DISTRICT OF STEWART

COPY

Office of the Mayor

June 5, 2012

Fisheries and Oceans Canada
Suite 200 - 401 Burrard Street
Vancouver, British Columbia V6C 3S4

Re: Stewart World Port

As Mayor of the District of Stewart, I am writing to endorse Stewart World Port Services Ltd.'s intent to construct and operate a multi-purpose port facility in Stewart, British Columbia.

Located at the end of the Portland Canal, Stewart is a natural deep sea port with works that include Stewart Bulk Terminals and a bulk log handling facility. Stewart's hinterland is one of the richest mineral regions in North America, and additional port facilities will be required to support the mining industry with outbound mineral concentrates and inbound mine supply.

Stewart World Port Services multi-purpose port is well aligned with the District of Stewart's "Investment – Ready Community Profile", provides economic investment and growth for the region, and adds much needed transportation capacity for the mining sector in Northwest British Columbia.

Sincerely,

Galina Durant

Galina Durant
Mayor

Post Office Box 460, Stewart, British Columbia V0T 1W0 Phone: (250) 636-2251 Fax: (250) 636-2417
Email: mayor@districtofstewart.com

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APPENDIX 5 – PILE DRIVING BMP`S

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Best Management Practices for Pile Driving and Related Operations – BC Marine and Pile Driving Contractors Association - March, 2003

The BC Marine and Pile Driving Contractors Association and Fisheries and Oceans Canada (DFO) have developed a Best Management Practices Policy for pile driving operations and related activities when working on the water within the province of British Columbia.

The Pile Driving Industry utilizes many different construction methods, equipment and materials in order to complete the contractual obligations for its client. Hammers; including drop, diesel, air, vibratory and hydraulic, vibroflot, and rotary, air and churn drills are the primary instruments in a pile driving operation. These hammers and drills are supported by a wide variety of heavy equipment, including a range of conventional cranes (truck mounted, crawler and pedestal mounted), spud scows, support barges and other water borne equipment. The piling types include treated timber (primarily creosote), concrete and steel (pipe, h-beam and sheet). Construction projects have the potential to utilize a number of different combinations of equipment and materials. It is the purpose of this document to examine the characteristics of each potential combination and develop a Best Management Practices Policy that will meet the following criteria:

-Maximize environmental protection
-Avoid contravention of the Fisheries Act
-Provide construction services economically

1)- Basic Rules of Operation

When in an aquatic environment, contractors will employ the following BASIC Best Management Practices:

- All equipment will be maintained in good proper running order to prevent leaking or spilling of potentially hazardous or toxic products. This includes hydraulic fluid, diesel, gasoline and other petroleum products.
- Storage of fuels and petroleum products will comply with safe operating procedures, including containment facilities in case of a spill.
- Pile cut-offs, waste or any miscellaneous unused materials will be recovered for either disposal in a designated facility or placed in storage. Under no circumstances will materials be deliberately thrown overboard.
- Contractors will have emergency spill equipment available whenever working near or on the water.
- Contractors, where possible, will position their water borne equipment in a manner that will minimize damage to identified fish habitat (i.e. eelgrass). Where possible, alternative methods will be employed (i.e.: use of anchors instead of spuds). In the event that circumstances will not allow an alternative, contractors will minimize the

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damage and where required restore habitat to its original state at the completion of the project.

- Prior to the commencement of any work, the contractor will complete and forward the attached "Notice of Project" to the Department of Fisheries and Oceans. Letters of advice or Habitat Authorizations may be required, depending on the scope of work proposed.
- If contractors are working and a herring (or other fish) spawning occurs, the work will be temporarily suspended and the appropriate DFO contact notified.
- There will be no restriction of work during closure periods (the only exception being when spawning is present), provided the contractors employ an exclusion device (protective netting or geotextile material suspended in the water column around pile driving area) around the work area to prevent fish access or when required, an effective method of mitigating shock waves (bubble curtain).
- Whenever shock wave monitoring (hydrophone) is performed at a marine construction site and the findings are available to the contractor, the data will be forwarded to the BC Marine and Pile Driving Contractors Association and Svein Vagle at the Institute of Ocean Sciences in Sidney, BC. It is hoped that a database can be built that will catalogue work procedures and reflect the safest and most economical approach to protecting the fish and their habitat.

2)-Timber Piling (creosote):

When driving timber piling, the following Best Management Practices will be employed to minimize/prevent impact to marine fish and their habitat:

- Where possible, new timber piles will comply with the best Management Practices for the use of treated wood in aquatic environments as developed by the Canadian Institute of Treated Wood and the Western Wood Preservers Institute and the DFO document "Guidelines to Protect Fish and Fish Habitat from Treated Wood Used in Aquatic Environments in the Pacific Region".
- Where the above is not possible creosote piling will stand (weather) for a minimum of 45 days prior to installation.
- These requirements are for new piling only. Reused piling will not be subject to any additional treatments, however, pilings with excessive creosote should be avoided.
- Timber piling is normally driven using a drop hammer, a diesel/air impact hammer or a small vibratory hammer. Because of the relative small diameter of the timber pile, and its excellent energy absorbing quality, there is little threat of sound pressure impacts to fish and their habitat when driving timber piles.
- Environmental monitoring of sound pressure impacts is not required.
- When demolition is required on timber pile structures, the contractor will remove the piling by mechanical means and avoid breaking the piling at the mud line or below. All demolition operations should be monitored in order to control and contain the construction debris and to determine whether there are any effects on fish.

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3)-Concrete Piles

When driving concrete piles, regardless of which hammer is being used, the following Best Management Practices will be employed to minimize/prevent impacts to fish habitat:

Less than 24 inch diameter

- The physical design of 24 inch concrete pile dictates that: 1/ the energy required must be controlled in order to prevent the pile from breaking and 2/ the concrete construction of the pile will absorb the energy. These two factors are expected to result in low level shock wave emission (less than 30 kPa.) and minimal or no effects to fish and their habitat should result.
- Environmental monitoring of sound pressure levels is generally not required.

Greater than 24 inch diameter

- When driving concrete piles with a diameter greater than 24 inches using an impact or hydraulic hammer, the following Best Management Practice will be employed to minimize the impact on fish habitat:
- Visual and hydrophone monitoring of the impact on fish by the sound waves emitted will be required. If sound pressures over 30 kPa is measured or a fish kill is evident, the contractor will introduce effective means of reducing the level of the shock waves. Appropriate mitigating measures would be the deployment of a bubble curtain over the full length of the wetted pile. This should reduce the shock waves to an acceptable level.
- If, despite the introduction of preventive measures, further visual/hydrophone monitoring reveals unacceptable conditions (fish kill or sound pressure over 30 kPa), then the work will stop immediately and the methods will be reviewed and corrected.

4)-Steel Pipe Piles

Less than 18 inch diameter

When driving steel piles 18 inches in diameter and less, regardless of the type of hammer being used, the following Best Management Practices will be employed to minimize/prevent impacts to fish habitat:

- Because of the small diameter of the pile it is assumed that the energy required to drive the pile to the final point of installation will not result in shock waves in excess of 30 kPa, therefore, protective measures to reduce shock waves are not expected to be required.

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- If, however, ground conditions during pile installation cause a fish kill, work will cease and contractors will be responsible for introducing effective means of reducing the level of shock waves or will introduce measures that will prevent fish from entering the potentially harmful shock wave area. Appropriate mitigating measures would include the deployment a bubble curtain over the full length of the wetted pile. This technique should reduce the shock waves to an acceptable level.
- If, despite the introduction of preventive measures, further visual/hydrophone monitoring reveals unacceptable conditions (fish kill or sound pressure over 30 kPa), then the work will stop immediately and the methods will be reviewed and corrected.

Greater than 24 inches in diameter

When driving steel pipe piles with a diameter greater than 24 inches using impact or hydraulic hammers, the following Best Management Practices will be employed to minimize/prevent impacts to fish habitat:

- Hydrophone and visual monitoring of the effects of the shock waves on fish will be required. If a fish kill occurs, the contractor will introduce effective means of reducing the level of the shockwave. Appropriate mitigating measures would be the deployment of a bubble curtain over the full length of the wetted pile.
- If, despite the introduction of preventive measures, further visual/hydrophone monitoring reveals unacceptable conditions (fish kill or sound pressure over 30 kPa), then the work will stop immediately and the methods will be reviewed and corrected.

5)-Steel Sheet Piles and H-piles

When driving steel sheet piles and H-piles with a drop hammer, an impact hammer or a vibratory hammer, the following Best Management Practices will be employed to minimize the impact on fish habitat:

- It is anticipated that the driving of these types of piles will not generate shock waves in excess of 30kPa, therefore, mitigating measures are not expected to be required.
- If, however, ground conditions during pile installation cause a fish kill, work will cease and contractors will be responsible for introducing effective means of reducing the level of shock waves or will introduce measures that will prevent fish from entering the potentially harmful shock wave area. Appropriate mitigating measures would include the deployment a bubble curtain over the full length of the wetted pile. This technique should reduce the shock waves to an acceptable level.
- If, despite the introduction of preventive measures, further visual/hydrophone monitoring reveals unacceptable conditions (fish kill or sound pressure over 30 kPa), then the work will stop immediately and the methods will be reviewed and corrected.

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6)-Stone Column Construction

When installing stone column using a vibroflot, the following Best Management practices will be employed to minimize/prevent impacts to fish habitat:

- The vibrating action and air flush associated with the operation of the probe results in a high degree of turbidity. When this level exceeds the criteria as outlined in the British Columbia Approved Water Quality Guidelines, the contractor will introduce containment methods that are designed to isolate the contaminated area and to prevent fish from entering the contaminated area. Silt curtains and netting are two methods that can provide the necessary protection.
- When supplying the aggregate to the probe, the contractor will ensure that spillage is prevented, thereby providing additional protection to fish habitat.
- An independent environmental consultant will be used to monitor turbidity levels.

7)-Underwater Drilling and Blasting

When performing underwater drilling and blasting the following Best Management Practices will be employed to minimize/prevent impacts to fish habitat:

Underwater Drilling

- Generally, drilling underwater is a process that has very little impact on fish or fish habitat. The procedure does not generate shock waves.
- Contractors will ensure that all attachments (hydraulic connections and couplings) are in good operating order and inspected prior to the start of every day. Spill kits and containment booms must be maintained on-site in case of spills.
- Depending on soil conditions and the potential for turbidity, drill cuttings will be deposited adjacent to the operation, contained on the sea bed or pumped to the surface for deposit into containment skiffs or scows for land disposal when it is determined that the drill cuttings are unsuitable for return to the environment.

Underwater Blasting

Contractors required to perform blasting underwater will provide the following protection to minimize/prevent impacts to fish habitat:

- Because of the potential for harmful shock waves resulting from a blast, a protection shield will surround the immediate blast area. This would be in the form of an air-induced bubble curtain, which has the primary purpose of absorbing the shock wave and a secondary purpose of preventing fish from entering the blast area.
- In order to protect against flying rock, mats (rubber) will be placed over the blasting area. The placement of the mats may also provide protection for any fish swimming in the immediate area.

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- Monitoring of fish movement and concentrations will be conducted using a sounder to determine if fish herding or scaring techniques (seal bombs) can be utilized to reduce the presence of fish in the blast area.

8)-Cleaning out Pipe Piles:

When cleaning out pipe piles (i.e.: air lifting) the following Best Management Practices will be employed to minimize/prevent impacts to fish habitat:

- Generally, sediment contained in the pipe is will be pumped to the surface and processed through an approved containment system and disposed of at an approved landfill site.
- In exceptional circumstances, if the sediment is non-toxic, fish are not present in the area, and adjacent fish habitats are not a concern (contact DFO) it may be acceptable to:

1. Pump the sediment through a discharge tube and allowed it to settle in the immediate area with or without a silt curtain to contain the sediment.
2. Pump the sediment through a discharge tube and additional flex hosing and redirect it back to the base of the pile.

9) Containment of Concrete Residue and Water Run Off

When placing concrete in form work over or in water, the following Best Management Practices will be employed to minimize/prevent the impacts to fish habitat:

<u>Pouring concrete</u>

- Spills: When pouring concrete all spills of fresh concrete must be prevented. Concrete is toxic to fish due its high pH. If concrete is discharged from the transit mixer directly to the formwork or placed by wheelbarrow, proper sealed chutes must be constructed to avoid spillage. If the concrete is being placed with a concrete pump, all hose and pipe connections must be sealed and locked properly to ensure the lines will not leak or uncouple. Crews will ensure that concrete forms are not filled to overflowing.
- Sealing forms: All concrete forms will be constructed in a manner which will prevent fresh concrete or cement-laden water from leaking into the surrounding water.

<u>Curing concrete</u>

- When fresh water is used to cure concrete, the run off must be monitored for acceptable pH levels. If the pH levels are outside the allowable limits then the run off water must be contained and neutralized.

<u>Grinding concrete</u>

- When grinding cured concrete, the dust and fines entering the water must not exceed the allowable limits for suspended solids. When grinding green or incompletely cured concrete and the dust or fines are entering the water, pH

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monitoring will be conducted to ensure allowable ranges are maintained. In the event that the levels are outside the acceptable ranges, preventative measures will be introduced. This may include introducing silt curtains to contain the solids and prevent fish from entering a contaminated area or constructing catch basins to recover the run off and neutralizing it prior to disposal.

Patching concrete

- Spills: When patching concrete, all spills must be contained and prevented from entering the water.

Washing hand tools, pumps and transit mixer

- All tools, pumps, pipes, hoses and trucks used for finishing, placing or transporting fresh concrete must be washed off in such a way as to prevent the wash water and excess concrete from entering the marine environment. The wash water will be contained and disposed of upland in an environmentally acceptable manner.

Whenever there is the possibility of contaminants entering water, the contractor will monitor pH levels to ensure acceptable levels.

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APPENDIX

Fisheries and Oceans Canada

Contact List

Name	Telephone No.	Fax. No.

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NOTICE OF PROJECT

To: Fisheries and Oceans Canada

Attention:

Fax. No.:

From: "Contractor"

Telephone No.:

Fax. No.:

Representative:

Please be advised of the following marine/pile driving project:

Project Name:

Project Location:

Project Manager/Superintendent:

Project Telephone No.:

Project Fax. No.:

Project commencement date:

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APPENDIX 6 – SALTMARSH CONSTRUCTION BUDGET

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ARCTIC CONST. LTD.
BUILDING BETTER SINCE 1953

www.arctic-const.ca – info@arctic-const.ca

October 25, 2012

Brad Moffat
Business Development
Stewart World Port

RE: Stewart World Port – Salt Marsh Construction Budget

Dear Mr. Moffat,

The following is a budget and plan to construct a salt marsh for Stewart World Port. Our pricing is based on the attached sketches and instructions received from your office.

Attached you will find a scope of work including assumptions. Based on the details provided, the total costs are estimated at **$72,160.00 plus taxes**.

If you have any questions or require any further clarification please do not hesitate to give us a call.

Sincerely,

Grant Barley
Vice-President of Operations
Arctic Const. Ltd.

Fort St John - Head Office
11421 Alaska Road
Fort St. John, BC
V1J 6N2
Office 250.785.8995
Fax 250.785.9000

Whitehorse
Suite 106, 2131 2nd Avenue
Whitehorse, YT
Y1A 1C3
Office 867.393.2980
Fax 867.393.2985

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Clarifications and Assumptions

Our construction estimate is based on the attached drawings and the following clarifications and assumptions:

The following items will be covered by the Owner and have therefore not been included in our estimate:

1. Development permit fees
2. Financing and Owner's administrative costs
3. City permits, fees, and inspections
4. Wrap up liability insurance, course of construction, builders all risk insurance
5. Legal fees of any kind

General Requirements

We have included all of the following materials and services within the scope of this estimate:

1. Site supervision and administration
2. Staff related expenses
3. Mobilize and demobilize
4. Freight and courier
5. Traffic control
6. Out of town expenses
7. Daily and final clean-up
8. Site signage
9. General equipment rentals
10. Small tools and consumables

Estimate Detail

Summary

Item	Cost	Comments
Fill	$37,300	Includes containment berm
Capping	$2,200	Remove, stockpile, replace
Other Materials	$1,500	Fencing, etc.
Planting	9,600	
Monitoring	15,000	
Sub Total	65,600	
10% Contingency	6,560	
Total	72,160	

Fill Detail

Footprint (m2)	Depth(m)	Volume(m3)	Cost per m3	Cost for Material
1,865	2	3,730	10	37,300

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Planting Detail				
# hrs / week	# weeks	# People	Cost / hr	Cost for Planting
40	2	2	60	9,600

Monitoring Detail				
# Visits	Travel	Onsite Costs	Report Costs	Cost for Monitoring
3	1,500	2,000	1,500	15,000

Construction Plan

All works will be completed in low tide window using the best management practices the client has committed to in their application to the Department of Fisheries and Oceans. Works will be conducted in thirds moving along the fill area.

1. Hoe will be used to strip the top 0.6m of sediments from the existing ocean floor and stockpiled.
2. Fill will be removed via hoe and gravel truck from the Bear River under District of Stewart license of occupation and reclamation permit. Material will be hauled to saltmarsh location via gravel truck and placed with hoe. Final leveling will be completed with dozer.
3. Works will include the construction of a slope stabilization berm. Rock for these works may be obtained under licence from the District of Stewart quarry.
4. Material previously stockpiled will be placed as cap using hoe or dozer.
5. Surface will be sloped to ensure proper drainage and elevation will be confirmed with laser level to ensure surface is within +/- 1 cm of target marsh elevation as confirmed by a qualified biologist.
6. Once all marsh sections are constructed, transplanting will be conducted by labourers under the guidance of a qualified biologist ensuring a minimum density of 1 saltmarsh plug per m^2.

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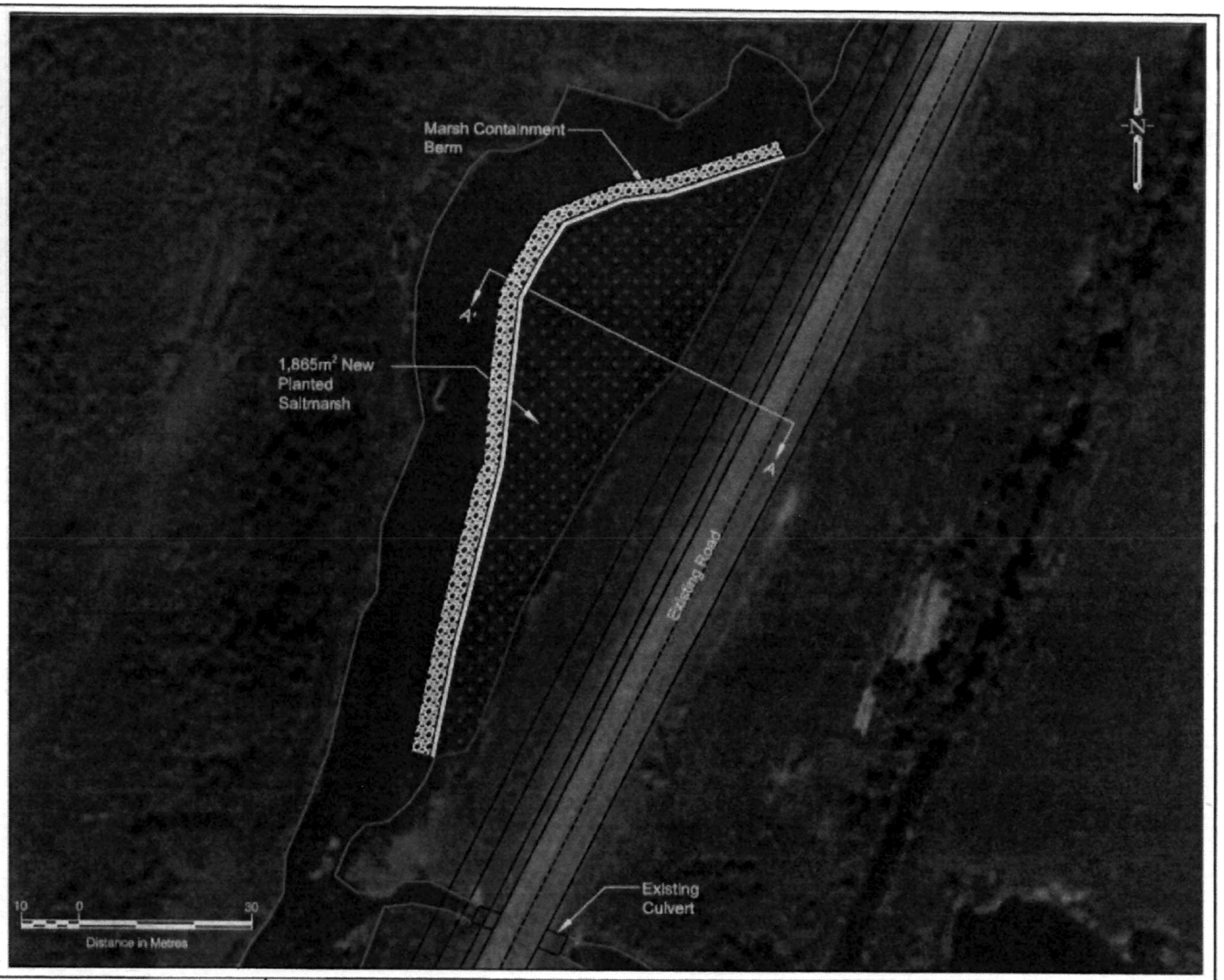
Photo 1. Aerial photo showing location of Saltmarsh Compensation south of 1st Ave. in Stewart, British Columbia.

LEGEND

- Existing Structures
- Approximate Centerline of Road Cross Section A-A'
- New Marsh Containment Berm
- New Planted Saltmarsh Habitat

DRAWING NOTES

- Existing conditions have been estimated based on aerial-imagery and preliminary on-site observations.
- Actual location and orientation of saltmarsh must be confirmed by a qualified environmental consultant prior to construction.
- Actual elevation of saltmarsh bench must be confirmed by a qualified environmental consultant to an accuracy of +/- 1 cm prior to construction.
- The constructed area of new saltmarsh must be at least 1,865m^2 in size and must be planted at a minimum density of 1 saltmarsh plug per square meter.
- See Balanced Drawing 5397-D-09.1 Typical Marsh Cross Section for Details.



Ref. No.	REFERENCE

Client
ARCTIC CONSTRUCTION
11421 Alaska Road
Fort St. John, BC
V1J 6N2

Author
BALANCED ENVIRONMENTAL

Checked by	XIE
Drawn by	DC
Date	Oct. 24, 2012
Scale	1:750
Inspectors	-
Paper	11 x 17

PROJECT
SALTMARSH ENHANCEMENT PLANVIEW
HABITAT COMPENSATION
BARGE RAMP RELOCATION PROJECT
STEWART, BRITISH COLUMBIA

DWG. No. 5397-D-08.2

BALANCED ENVIRONMENTAL SERVICES INC.

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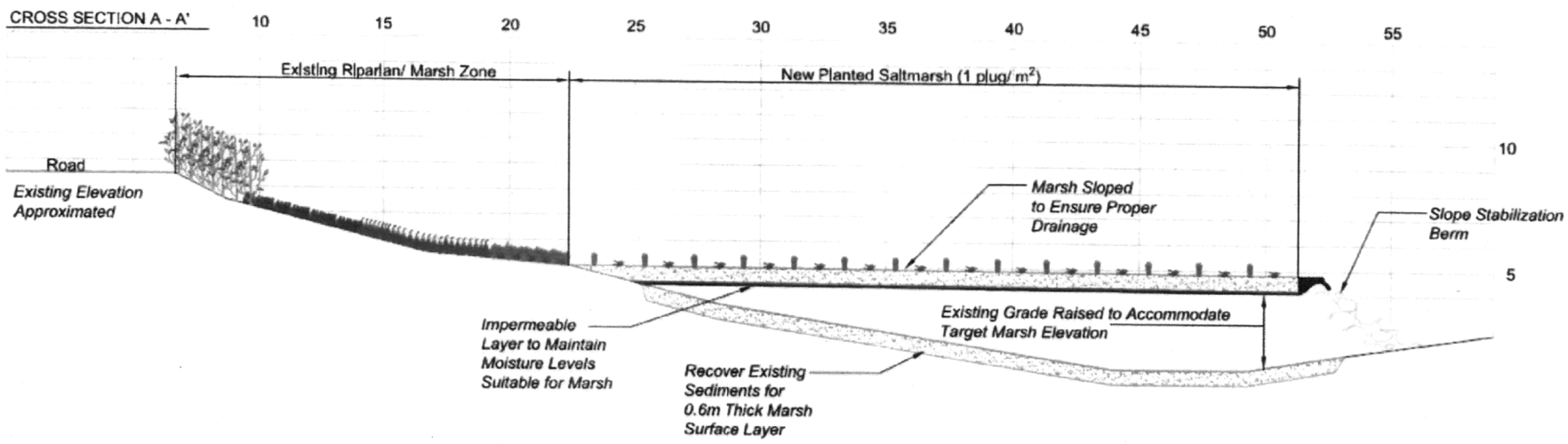

LEGEND

- Existing Structures
- Impermeable Layer
- Slope Stabilization Berm
- Existing Sediments Recovered and Placed on Surface of Marsh Bench
- Saltmarsh Species

DRAWING NOTES

- Existing conditions have been estimated based on aerial imagery and preliminary on-site observations.
- Drawing elevations are in metres and have been approximated.
- Actual location and orientation of saltmarsh must be confirmed by a qualified environmental consultant prior to construction.
- Actual elevation of saltmarsh bench must be confirmed by a qualified environmental consultant to an accuracy of +/- 1 cm prior to construction.
- The constructed area of new saltmarsh must be at least 1,865m² in size and must be planted at a minimum density of 1 saltmarsh plug per square meter.
- See Balanced Drawing 5397-D-08.2 for plan view details.

MARSH NOTES

- New marsh elevation to be designed to match existing mean marsh elevation.
- Any marsh plants impacted by construction to be recovered and re-planted.

Ref. No.	REFERENCE

Client
ARCTIC CONSTRUCTION
11421 Alaska Road
Fort St. John, BC
V1J 6N2

Author
BALANCED ENVIRONMENTAL

Checked by	XIE
Drawn by	DC
Date	Oct. 24, 2012
Scale	1:750
Inspectors	-
Paper	11 x 17

PROJECT
SALTMARSH ENHANCEMENT CROSS SECTION HABITAT COMPENSATION BARGE RAMP RELOCATION PROJECT STEWART, BRITISH COLUMBIA

DWG. No. 5397-D-09.1

BALANCED ENVIRONMENTAL SERVICES INC.

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From: bpettit@stewartworldport.com
Sent: Tuesday, February 5, 2019 11:07 AM
To: FPP.PAC / PPP.PAC (DFO/MPO)
Cc: Barber, Boone; Mercer, Vance; Staplin, Sean FLNR:EX; 'Pittman, Samuel FLNR:EX'; Ted Pickell; Warren Appleton; Kevin Orpen
Subject: Post Construction Report Authorization 17-HPAC-00206
Attachments: 2018-12_SWP_AS-BUILT-REPORT-COMPLETE.pdf

Good morning,

Attached is the post construction report for the Parcel C Offset associated with DFO authorization 17-HPAC-00206 and FLNRRD Water Branch Approval 6001890. Please do not hesitate to contact me if you require anything further.

Thank you.

Brad Pettit
President and Director
Stewart World Port
Mobile 250-961-0215
Field Office 250-636-2228
bpettit@stewartworldport.com
www.stewartworldport.com

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PDM Services Ltd

Post-Construction & As-Built Report
'Parcel C'
for
Stewart World Port

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7 APPENDIX C **36**

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1 Preface

The following report concludes the Environmental Monitoring of the construction activities related to Habitat Offset Parcel C, Stewart World Port Services Ltd. The project was undertaken between November 19th and December 5th, 2018. Associated results are outlined in the body of the report.

1.1 Professional Statement

This report titled Post-Construction & As-Built Report 'Parcel C' for Stewart World Port, Stewart, BC has been prepared by Kevin Orpen.

January 29, 2019
Date

Kevin Orpen, P. Eng.
President
PDM Services Ltd.

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2 Project Description

As part of the compensation process to mitigate the construction of the Stewart World Port, including the causeway and groyne, the Fish Habitat Offset Plan expanded previous works to include the construction of permanent deep pools, undercut banks, lowered edge pools, and the creation of marsh land, gravel slopes with a variety of substrate sizes, and interconnecting low flow channels.

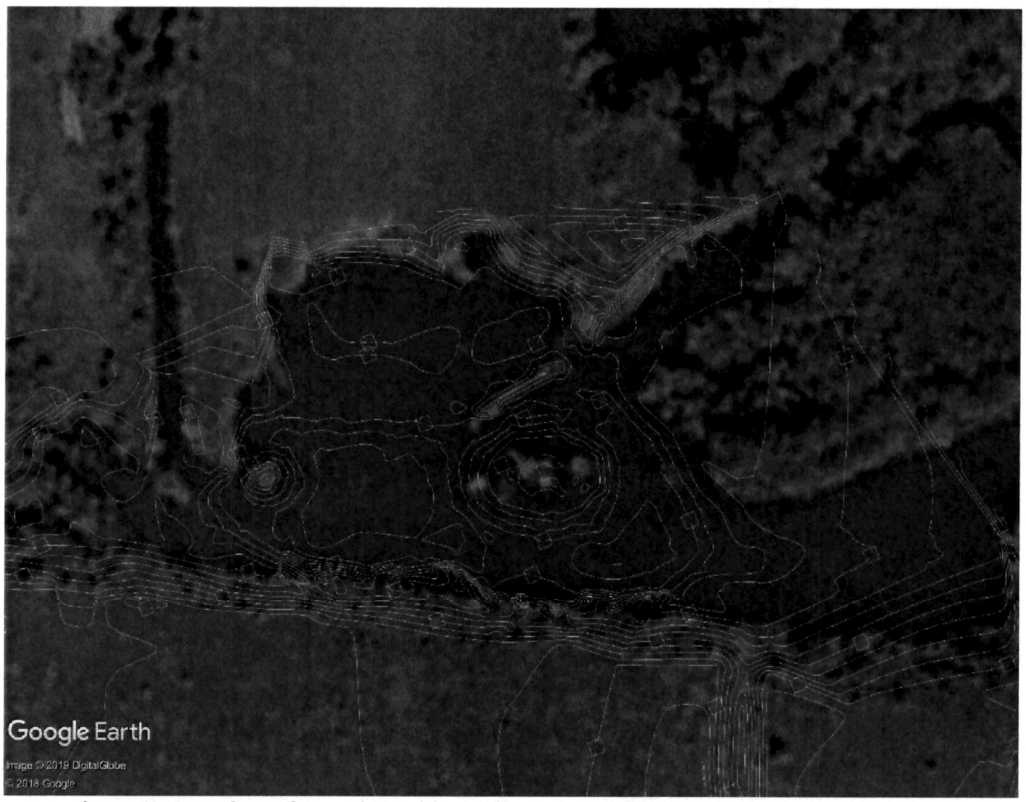

Figure 1: Overview of Parcel C Habitat Offset Plan, with As-Built Contour Overlay.

The construction process included removal of unusable sediments, silts, and sandy silts that were deposited on original riverbed gravels since industrialization of the area and covered the area proposed for treatment. Items previously placed within the work site were removed, stored, and reutilized in the current work plan. The surrounding banks were sloped, river gravels were imported and placed within the undercut bank complex, and assurances were implemented to connect the pools with channels throughout the project footprint. Access to the wetted area was gained by an existing trail to the west & a new trail to the marsh from the south, and overburden materials were removed and stored on high ground for later use.

3 Site Conditions

The general area was previously accessed to install log, boulder, and stump structures in April 2017, as part of Parcel A Fish Habitat Offset Project installations. At that time, fish salvage results within the work area before the works was limited to 5 juvenile salmon and 190 stickleback. The 2018 Parcel C fish

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salvage results included 1,937 juvenile salmon, 6 Dolly Varden, 914 stickleback, and 74 sculpin. There is significant satisfaction in these results as the values demonstrate that strategies used to promote an increase of salmon population were effective. Namely, the concentrations found at or very near standing or overturned stumps were obvious, with very high populations near stumps placed in the previously built deep pool (>1.5m).

Average daily temperatures during the fish salvage was between 3° & 4°, dipping to 2° nightly. This foreclosed the opportunity to utilize an electroshocking strategy. Upon completion of the salvage and the release to proceed with the construction works, average daily temperatures rose to 5° – 6° from Nov. 26th to the 30th, then dipped below zero from Dec. 1st to the 5th, to as low as -7°. This trend provided favourable construction conditions, allowing for minimal disturbance when structural components were placed and limited water control collection and redistribution from low-lying areas within the footprint. By Dec. 2nd, all surface waters at outlet were frozen to streambed and no flow was observed.

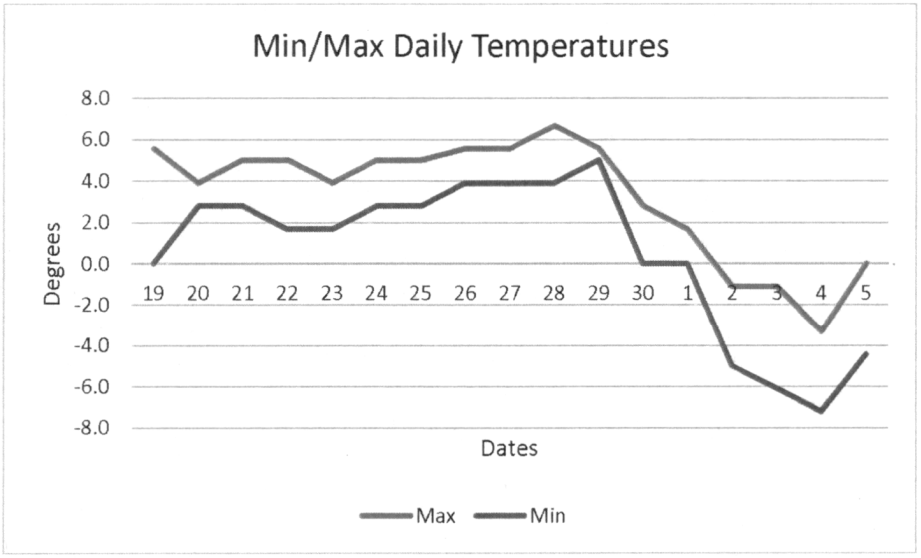

Figure 2: Daily Min/Max temperatures

Accomplishments

- **<u>Type 1: Permanent Deep Pools</u>**
  Target 589 m2 - Deep Pool #1; The largest pool is an expansion of the previously installed linear pool. The depth of overburden throughout the area was 600 to 900mm deep, with an underlying substrate of uniformly graded river gravels and sands. This provided a (surprising) platform for excavator to travel without further disturbance or settlement. Due to the quality of the new surface materials, depth of cut permitted a favourable over-excavation, from a target of 8.0m to 7.5m, with low spots of 7.3m. Generally, there are no areas above the target 8.0m low elevation. The low spots were above the previous pool bottom and infilling with local gravels permitted an even-slope shape of the pool.
  Achieved = 589 m2

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Target 198 m2 - Deep Pool #2; The smaller pool to the east is located where seasonal flows from the upper beaver ponds enter Parcel C. It is also downstream of the Dike culverts where extreme river flows, during seasonal highwater conditions, enter Parcel C. Similar to Deep Pool #1, the underlying substrate of uniformly graded river gravels and sands was encountered at 7.5m. The pool is even-shaped and connected to the two prescribed channels, and slopes transition uniformly into inflow pond.

Achieved = 192 m2

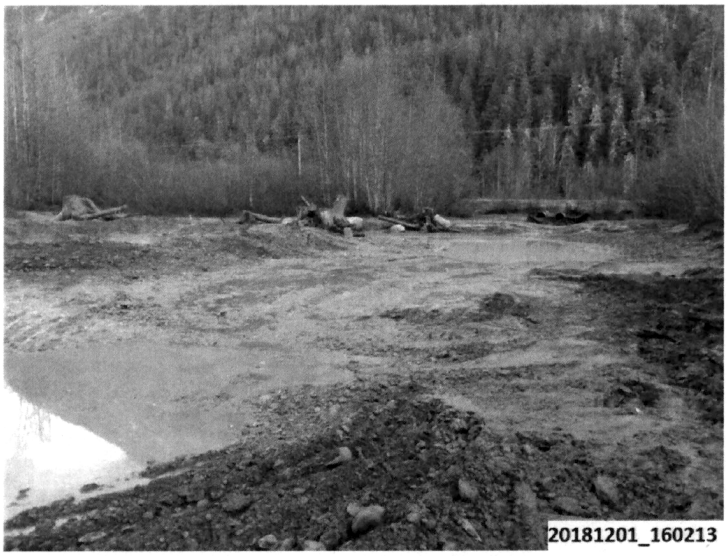

Figure 3: Deep Pool Shaping

Figure 4: Underlying Substrate – Pools

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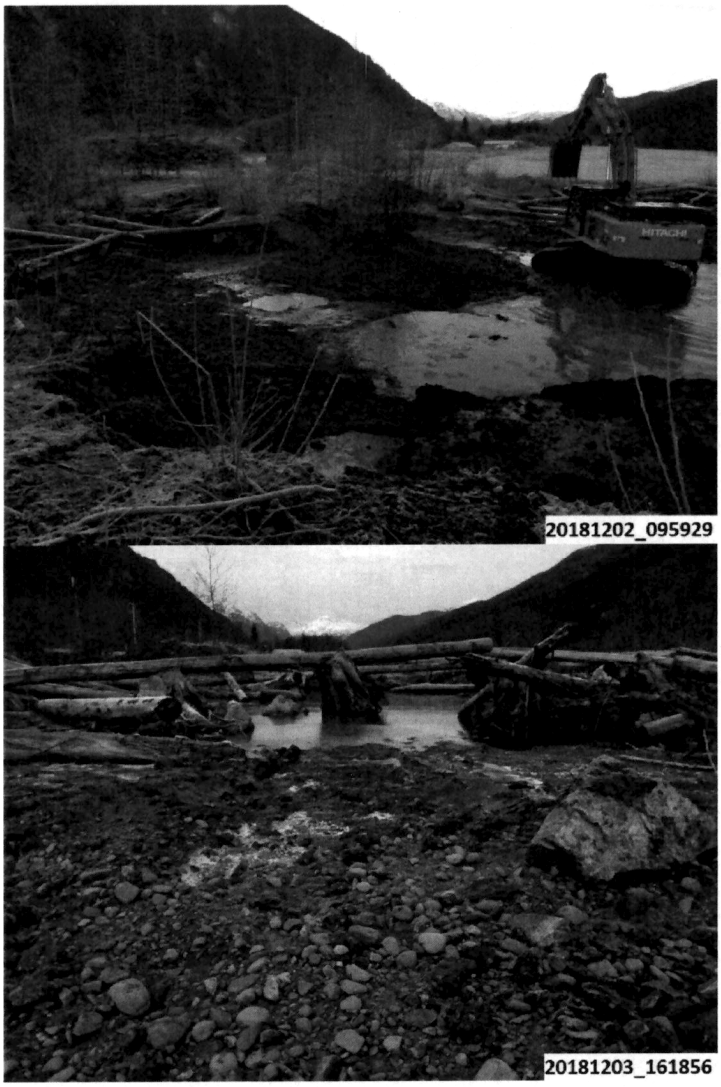
- **Type 2: Connecting Channels**
  Target 167 m2 - Connecting Channel #1: This channel surrounds the existing island on the western side of Parcel C and connects Deep Pool #1 to the outlet channel. Additional work was required to create a channel formation that also connected the Parcel B pool to the Parcel C network, by installing a 300mm deep by 2m wide and 4m long trench, as the natural formation between Parcel B & C isolated the two pools.
  Achieved = 175 m2



Figures 5 & 6: Channel #1 – Island. Note 500mm elevation difference between Pool and Channel, substrate, and perimeter staking (top photo). Additional channel work to join Parcel B with Parcel C through natural berm with a shallow channel (bottom photo).

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Target 91 m2 - Connecting Channel #2: This channel connects Deep Pool 1 & 2. During construction, channel segment was used as the access trail for the installation of the marsh. The channel is at least 400mm above the Pool bottoms and 600mm below projected low flow elevation.
Achieved = 91 m2

Figure 7: Channel #2 – Deep Pools #1-to-#2. Photo taken during construction of marsh, to illustrate rise, width, and depth of proposed channel structure. Upon completion of marsh, the channel was recontoured and graded to lift the bottom squarely.

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Target 91 m2 - Connecting Channel #3: This channel connects the eastern sections of Parcel C to Parcel B and Deep Pool #2, including the seasonal backchannel to the beaver ponds. During staking of the channel, it was found that unmapped elevation changes foreclosed connectivity between the three areas, isolating the Lowered Area #3 and Parcel B. Channel #3 was extended 8m by 2m into these areas without compromising the installations of Parcel C, as well as provided contouring onto the northern slopes of the marsh.
Achieved = 107 m2

Figure 8: Channel #3 – East. Note extension of channel into Parcel B edge beyond staked boundary, providing additional access to Lowered Edge #3 with at least 300mm below projected low flow elevation.

- **<u>Type 3: Undercut Banks</u>**
  Target 238 m2 - South Bank; The southern bank of Parcel C was prepared to contain a matrix of large woody debris including stumps and logs, coho-friendly gravels, and boulders. Structural support was provided to lift and secure root wads because stems were not attached to the green roots due to logging requirements. Root wads found with stems attached were excessively deteriorated/rotten and were deemed to be ineffective for the desired purpose. Boulders were embedded into the structures to provide a) lift when placed along wetted edges, b) anchoring when placed alongside and within stump complexes, and c) support when placed under or in front of heavier structures. Gravels were placed above, around, and below structures to envelop matrix of materials that will provide the desired effect for juvenile salmon.
  Achieved = 238 m2

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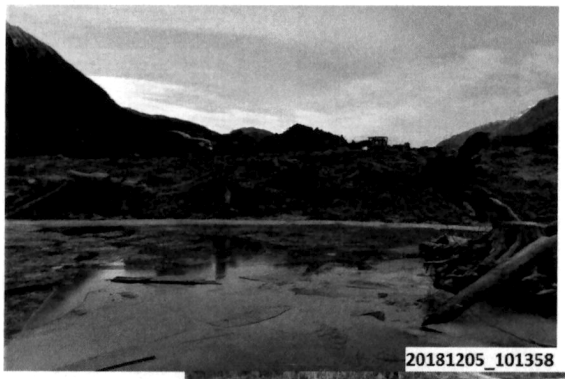
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20181205_101407

20181205_132412

20181205_132426

20181205_132514

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Figures 9-14: Undercut Bank. Note inclusion of gravels in-between and below woody debris and embedded boulders, and voids under logs and stumps.

Type 4: Mixed rock sizes and large woody debris on side slopes

Target 561 m2 - All slopes; An array of materials, including boulders, logs, and stumps were placed along all slopes, providing a natural mix of substrate conditions on the banks. Where larger stumps provided a wide and complex area of cover, specific strategies were utilized to both lift and anchor the large woody debris by utilizing larger boulders under the root wads and used clamps to secure wire rope between the boulders and the stumps as a permanent binder. The eastern, western, and northern slopes included exposure of naturally-occurring clean gravels and sands. Where placed, boulders were mostly embedded into the gravels by pressure. However, where shape was a factor that could provide additional cover features, boulders were placed on top of the gravels or combined to create an opening between the boulders.

Structures were placed as mapped, to conform with intended objectives. Size and connectivity were field-fitted to best approximate natural conditions as structures were placed. All boulders were drilled to provide anchoring strong points. Wire rope was threaded through available openings in root masses and logs to permanently secure the structures during HHWM events when flooding will cause some items to be subject to floatation.

Achieved = 561 m2

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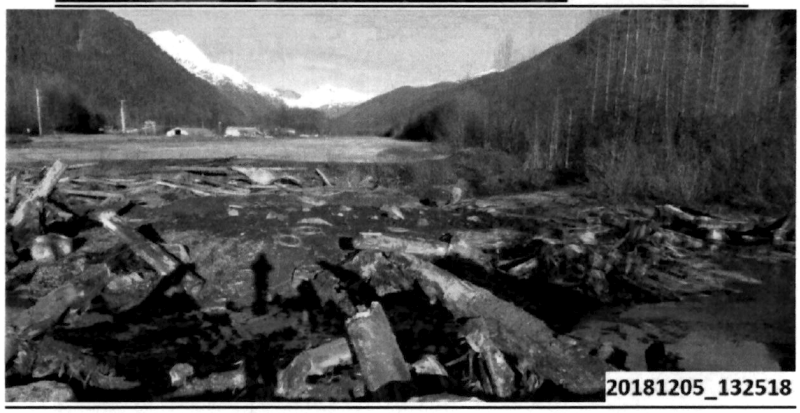

Figures 15-19: Treatment of slopes with boulders, large woody debris, and gravels.

Type 5: Marsh Pocket

Target 134 m2 - Island with enclosed marsh habitat; Constructed in the near vicinity of the deep pools, with a top and bottom elevation falling within low and high-water elevations. Organic growing medium that supports infauna was imported and placed within a depression that held the equivalent of 72 m3. The depression was created within a gravel berm, shaped to provide depth to low water elevation, and the edges were rolled to minimize erosion away from the top of the marsh pocket.

Achieved = 134 m2

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Figures 20-22: The three stages of construction of Marsh Pocket.

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Type 6: Additional Shallow Pool Areas

Target 236 m2 - Excavation to add pool area; There were 6 areas identified for excavation of slopes to add pool area below the HWM. In all cases, excavations exposed sands and gravels deemed favourable for pool substrate. In the case of the two northwestern pools, inspection revealed that wastes had been deposited in the corner and excavation of the slopes would not have provided a stable sidewall structure. By removing the waste materials, the two areas were combined as one, increasing the area from 19 to 38 m2 to the total area. However, the eastern area did not allow for sloping in the restricted area identified. The area was reduced from 7 m2 to 4 m2.

Achieved = 252 m2

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Figures 23 -27: Five areas excavated to add pool area, from west to east.

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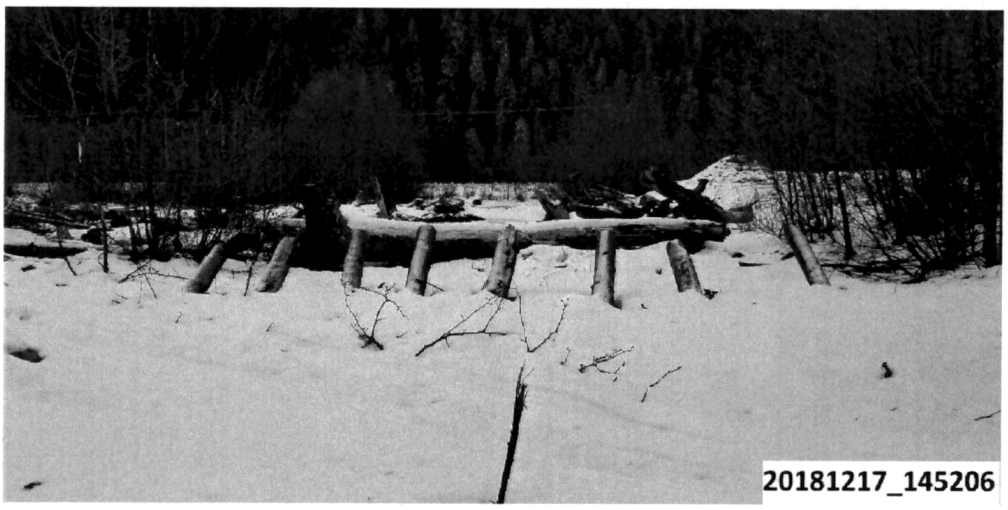
Type 7: Weir

Target 0 m2 - Control Measure: On or about August 10, 2018, a seasonal storm event occurred which created a surge through the existing Parcel B structures. This included significant flows from the Airstrip Ditch and through the upstream beaver ponds and dike culverts. Woody debris was carried over and through the existing berm at the outlet of Parcel C and proceeded to block the culvert under Main Street. To mitigate future similar occasions, a 750mm log was buried across the berm and 'dragon teeth' 200mm logs were installed to catch any large debris that may float towards the culvert. To further enhance the structure, the buried log was flat-slabbed at current ground level to provide a non-erodible control weir, not subject to high flow erosion forces that would lower the elevation of the permanent water column. The weir is located downstream of the confluence of the Airstrip Ditch and Channel #1.

Achieved – 0 m2



4 Monitoring

The following section describes the monitoring results for the project.

4.1 Reporting

Baseline survey of the fish populations was undertaken at and upstream of the project area. Please see Appendix B.

The environmental monitor was on site throughout the term of activities and Daily Monitoring Reports were produced and circulated. Turbidity tests, pH acidity readings, and ambient temperature were taken daily confirming the stability of the conditions. Please see Appendix C.

4.2 Results

Turbidity tests were taken daily at the outlet of Parcel C. All results were within acceptable standards.

PH tests were taken during progress through the installations. All results fell within acceptable range.

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Wildlife observations included birds, only. No mammals were observed, though there was evidence of recent (summer) beaver activity. Due to very low water levels, it is assumed beavers migrated back upstream where water levels were favourable for dam construction and maintenance.

No measurable leaks or spills were reported.

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5 APPENDIX A

Parcel C – As-Built Survey

Pages 122 to / à 123

are withheld pursuant to section

sont retenues en vertu de l'article

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6 APPENDIX B

Fisheries Baseline Studies and Fish Salvage

Pages 125 to / à 137

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7 APPENDIX C

Water Quality & Environmental Summary

Page 139

is withheld pursuant to section

est retenue en vertu de l'article

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de la Loi sur l’accès à l’information

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From: Mercer, Vance
Sent: Thursday, February 7, 2019 1:30 PM
To: Major, Stephanie
Subject: RE: Post Construction Report Authorization 17-HPAC-00206

Awesome. No worries.

From: Major, Stephanie <Stephanie.Major@dfo-mpo.gc.ca>
Sent: Thursday, February 7, 2019 1:28 PM
To: Mercer, Vance <Vance.Mercer@dfo-mpo.gc.ca>
Subject: RE: Post Construction Report Authorization 17-HPAC-00206

You rock, thanks!!!

Stephanie Major
Senior Fisheries Protection Biologist | Biologiste principal, protection des pêches
Stephanie.Major@dfo-mpo.gc.ca
Telephone | Téléphone 604-666-7395
Cell | Cellulaire 604-418-9438
200 - 401 Burrard Street, Vancouver BC V6C 3S4
Fisheries and Oceans Canada | Pêches et Océans Canada
Government of Canada | Gouvernement du Canada

From: Mercer, Vance <Vance.Mercer@dfo-mpo.gc.ca>
Sent: Thursday, February 7, 2019 1:27 PM
To: Major, Stephanie <Stephanie.Major@dfo-mpo.gc.ca>
Subject: RE: Post Construction Report Authorization 17-HPAC-00206

Yes it does. I have uploaded in PATH and saved in the project folder as well.

V

From: Major, Stephanie <Stephanie.Major@dfo-mpo.gc.ca>
Sent: Thursday, February 7, 2019 1:25 PM
To: Mercer, Vance <Vance.Mercer@dfo-mpo.gc.ca>
Subject: RE: Post Construction Report Authorization 17-HPAC-00206

Does this mean you'll upload the report to PATH and the FPP drive?

Stephanie Major
Senior Fisheries Protection Biologist | Biologiste principal, protection des pêches
Stephanie.Major@dfo-mpo.gc.ca
Telephone | Téléphone 604-666-7395
Cell | Cellulaire 604-418-9438
200 - 401 Burrard Street, Vancouver BC V6C 3S4
Fisheries and Oceans Canada | Pêches et Océans Canada
Government of Canada | Gouvernement du Canada

From: Mercer, Vance <Vance.Mercer@dfo-mpo.gc.ca>
Sent: Tuesday, February 5, 2019 11:17 AM
To: bpettit@stewartworldport.com; FPP.PAC / PPP.PAC (DFO/MPO) <ReferralsPacific.XPAC@dfo-mpo.gc.ca>

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Cc: Barber, Boone <Boone.Barber@dfo-mpo.gc.ca>
Subject: RE: Post Construction Report Authorization 17-HPAC-00206

Thank you Brad.

I will update the project file and review the attached report.

I will be in contact if I have any questions.

Vance Mercer B.Sc., P.Biol.

Fisheries Protection Biologist, Fisheries Protection Program
Fisheries and Oceans Canada/Government of Canada
Vance.Mercer@dfo-mpo.gc.ca / Tel: 604-666-2427

Biologiste de la protection des pêches, La protection des pêches Programme
Pêches et Océans Canada | Gouvernement du Canada
Vance.Mercer@dfo-mpo.gc.ca / Tel: 604-666-2427

Projects Near Water website:
http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html

From: bpettit@stewartworldport.com <bpettit@stewartworldport.com>
Sent: Tuesday, February 5, 2019 11:07 AM
To: FPP.PAC / PPP.PAC (DFO/MPO) <ReferralsPacific.XPAC@dfo-mpo.gc.ca>
Cc: Barber, Boone <Boone.Barber@dfo-mpo.gc.ca>; Mercer, Vance <Vance.Mercer@dfo-mpo.gc.ca>; Staplin, Sean FLNR:EX <Sean.Staplin@gov.bc.ca>; 'Pittman, Samuel FLNR:EX' <Samuel.Pittman@gov.bc.ca>; Ted Pickell <tp@arctic-const.ca>; Warren Appleton <wappleton@keystoneenvironmental.ca>; Kevin Orpen <ko@arctic-const.ca>
Subject: Post Construction Report Authorization 17-HPAC-00206

Good morning,

Attached is the post construction report for the Parcel C Offset associated with DFO authorization 17-HPAC-00206 and FLNRRD Water Branch Approval 6001890. Please do not hesitate to contact me if you require anything further.

Thank you.

Brad Pettit
President and Director
Stewart World Port
Mobile 250-961-0215
Field Office 250-636-2228
bpettit@stewartworldport.com
www.stewartworldport.com

s.19(1)
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From: Shane Byrne
To: North Coast Scientific Permit / Permis Scientifique Côte Nord (DFO/MPO)
Subject: RE: Keystone Environmental Scientific Fish Collection Permit Application
Date: July-10-19 10:34:17 AM
Attachments: image001.png
12336 190709 DFO Scientific Fish Collection Permit Application.pdf

---

Sorry Chera. Here is the application and the maps as separate attachments.

Thank you,

From: North Coast Scientific Permit / Permis Scientifique Côte Nord (DFO/MPO) [mailto:DFO.NCSP-PSCN.MPO@dfo-mpo.gc.ca]
Sent: July 10, 2019 10:29 AM
To: Shane Byrne
Subject: RE: Keystone Environmental Scientific Fish Collection Permit Application

Hi Shane,

Can you please re-send me the maps in their own attachment?

Thx,

Chera Wheeldon
Administrative Assistant/ Administrateur Fisheries and Oceans Canada | Pêches et Océans Canada
North Coast Area | Secteur de la Côte Nord
PO Box 578, 3177 Tatlow Rd, Smithers, BC, V0J 2N0
Telephone | Téléphone: (250) 847-6124
Facsimile | Télécopieur: (250) 847-4723 Government of Canada | Gouvernement du Canada
Chera.Wheeldon@dfo-mpo.gc.ca

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From: Shane Byrne
Sent: July-10-19 10:20 AM
To: North Coast Scientific Permit / Permis Scientifique Côte Nord (DFO/MPO)
Subject: Keystone Environmental Scientific Fish Collection Permit Application

Good Morning,

I have attached the scientific fish collection permit as per our phone conversation earlier with the appropriate revisions we discussed. Please let me know if you require any additional information.

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s.19(1)

Regards,

Shane Byrne, Msc., B.I.T.
Junior Biologist

Keystone Environmental Ltd.
Knowledge-Driven Results | Tel: (604) 430-0671 | Mobile: [redacted]

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Fisheries and Oceans Canada / Pêches et Océans Canada

APPLICATION FOR A LICENCE TO FISH FOR SCIENTIFIC, EXPERIMENTAL, OR EDUCATIONAL PURPOSES

[X] Marine [X] Freshwater
[ ] Management of Contaminated Fisheries Regulations (MCFR)[1]

Area:
[ ] South Coast (Areas 11 to 27, 111, 121 to 127, 130, and Subarea 29-5)
[X] North Coast (Areas 1 to 10, 101 to 110, 130, 142)
[ ] Lower Fraser (Area 28, and Subareas 29-1 to 29-4)

Pacific Fishery Management Area Map:
http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/sci/images/DFO_areas.jpg

[X] New Application
[ ] Renewal of previous year's licence
[ ] Amendment to a current licence

Previous Licence #:
Current Licence #:

Name of Applicant	Date of Birth (Year/Month/Day)	Organization or School
Shane Byrne		Keystone Environmental Ltd.

Complete Mailing Address including City, Province and Postal Code
320 - 4400 Dominion Street, Burnaby, BC V5G 4G3

Phone	Fax	E-mail
604-430-0671	604-430-0672	

Species Common Name	Species Scientific Name	Life Stage	Number
Salmonids	Salmonidae	Various	N/A
Three-spined stickleback	Gasterosteus aculeatus	Various	N/A

[X] Survey only - No species to be targeted or retained

Gear Types to be Used
Gee Traps, dip nets, seine nets, electroshocking

Location Description	and/or Pacific Fishery Management Areas
Stewart, BC, Southeast end of Stewart Airport	
Bear River Estuary	

Vessel (leave blank if no vessel will be used)	VRN

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s.19(1)

Purpose of the project (attach separate pages if needed). Include as much detail as possible including methods of collection, disposition of the specimens, description of research activities and individuals or groups assisting with the authorized activity.

Stewart World Port constructed an avalanche shield at their facility at the south end of Main Street in Stewart, BC (Authorization 17-HPAC-00206). The authorization was submitted by Stewart World Port and were reviewed by Nisga'a First Nations during the Authorization approval process. Keystone Environmental has been retained by Stewart World Port to complete the year 1 effectiveness monitoring for the habitat offsetting for authorization 17-HPAC-00206. The location of the habitat offsetting is at the southeast corner of the Stewart airport (i.e., Parcel C; 55°55'45.64"N, 129°59'12.64"W). The area is a extension of habitat offsetting that was completed under authorizations 12-HPAC-PA4-00248 and 16-HPAC-00732. Fish sampling will take place in the offsetting habitat as well as at two reference locations. The first location is located upstream of the offsetting (55°56'6.98"N, 129°58'45.75"W) and the second is on a nearby watercourse (55°55'56.55"N, 129°59'14.16"W).

The area has been enhanced to provide salmonid rearing and over-wintering habitat. Methods of collection may included gee trapping, seine netting, dip netting and electrofishing. Fish trapped as part of sampling will be briefly detained for identification and measurements before being returned to the location from which they were collected. Keystone Environmental employees that may completed fish sampling include [redacted] Shane Byrne, [redacted]

If your licence does not need to be for a full year, indicate an end date:

Start Date: 2019/08/12 (Year/Month/Day) To: 2020/08/12 (Year/Month/Day)

Due to operational constraints, it may take up to 30 days to process this application.

Send (fax or mail) to:

South Coast Area
Mail to: Scientific Licence - South Coast
Fisheries & Oceans Canada
3225 Stephenson Pt. Rd.
Nanaimo, B.C. V9T 1K3
Fax: 250-756-7162
Phone: 250-756-7270

North Coast Area
Mail to: Scientific Licence - North Coast
Fisheries & Oceans Canada
417-2nd Avenue West
Prince Rupert, B.C. V8J 1G8
Fax: 250-627-3427
Phone: 250-627-3499

Lower Fraser Area
Mail to: Scientific Licence - Fraser River Area
Fisheries & Oceans Canada
3 - 100 Annacis Parkway
Delta, B.C. V3M 6A2
Fax: 604-666-7112
Phone: 604-666-8266

A Section 56 Fishery (General) Regulations Permit is required for the transfer of live specimens between marine areas, or to holding tanks which discharge to marine waters. The licence holder is required to make application to the Federal/Provincial Introductions and Transfers Committee.
See their website for application forms and contact information:
http://www-heb.pac.dfo-mpo.gc.ca/intro_trans/transfers_e.htm

For scientific or commercial harvest of marine plants (seaweed, algae, etc.) contact the B.C. Ministry of Agriculture and Lands (250 897-7540) or see their website for forms and contact information.
http://www.al.gov.bc.ca/fisheries/commercial/commercial_mp.htm

[1] If you intend to harvest bivalves from areas closed to bivalves due to PSP (red tide), ASP (domoic acid), or bacterial contamination you must apply for a Management of Contaminated Fisheries Regulations licence. A $100 fee applies for this licence payable to the Receiver General for Canada. Payment instructions will be sent when the application is processed.

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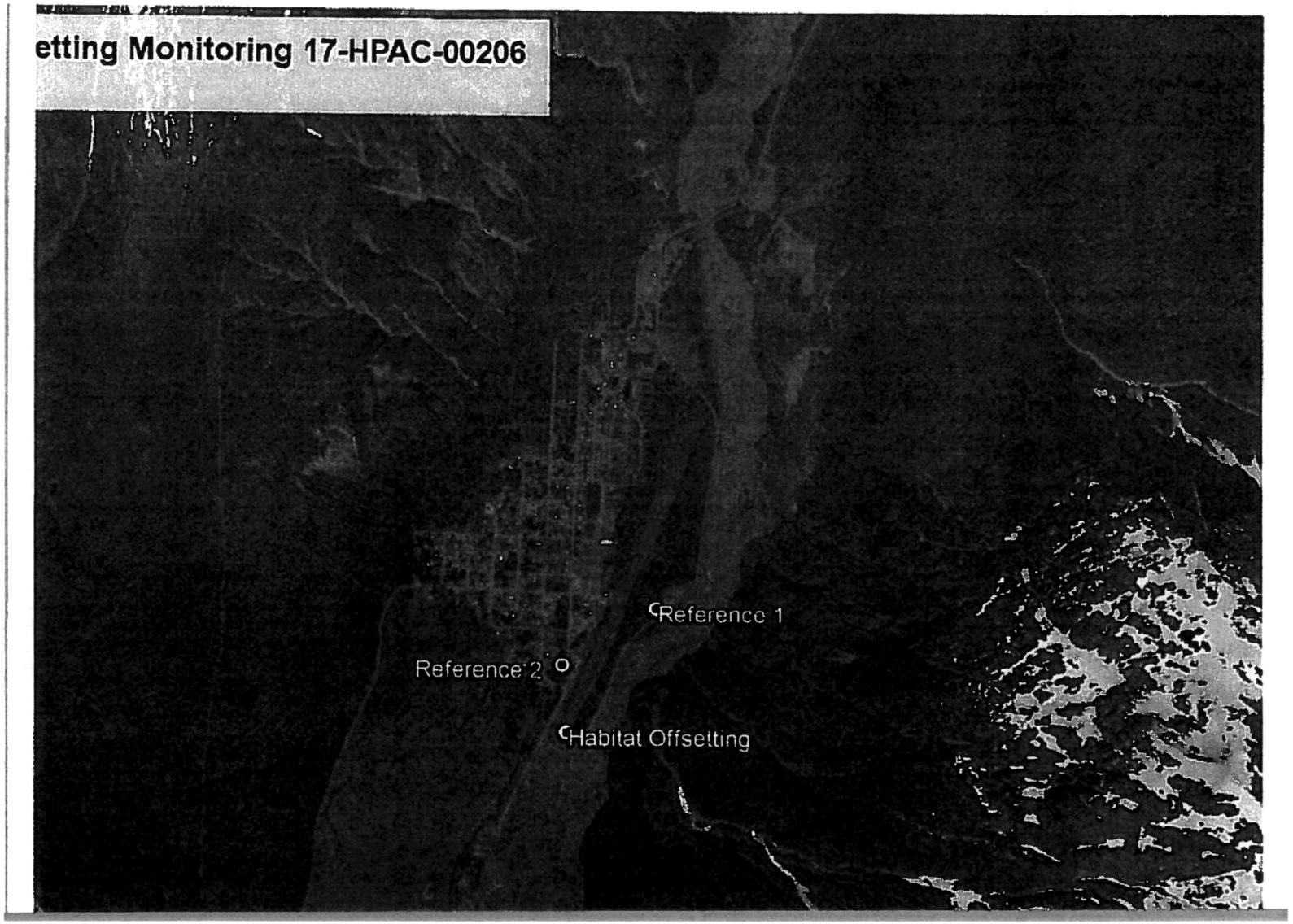

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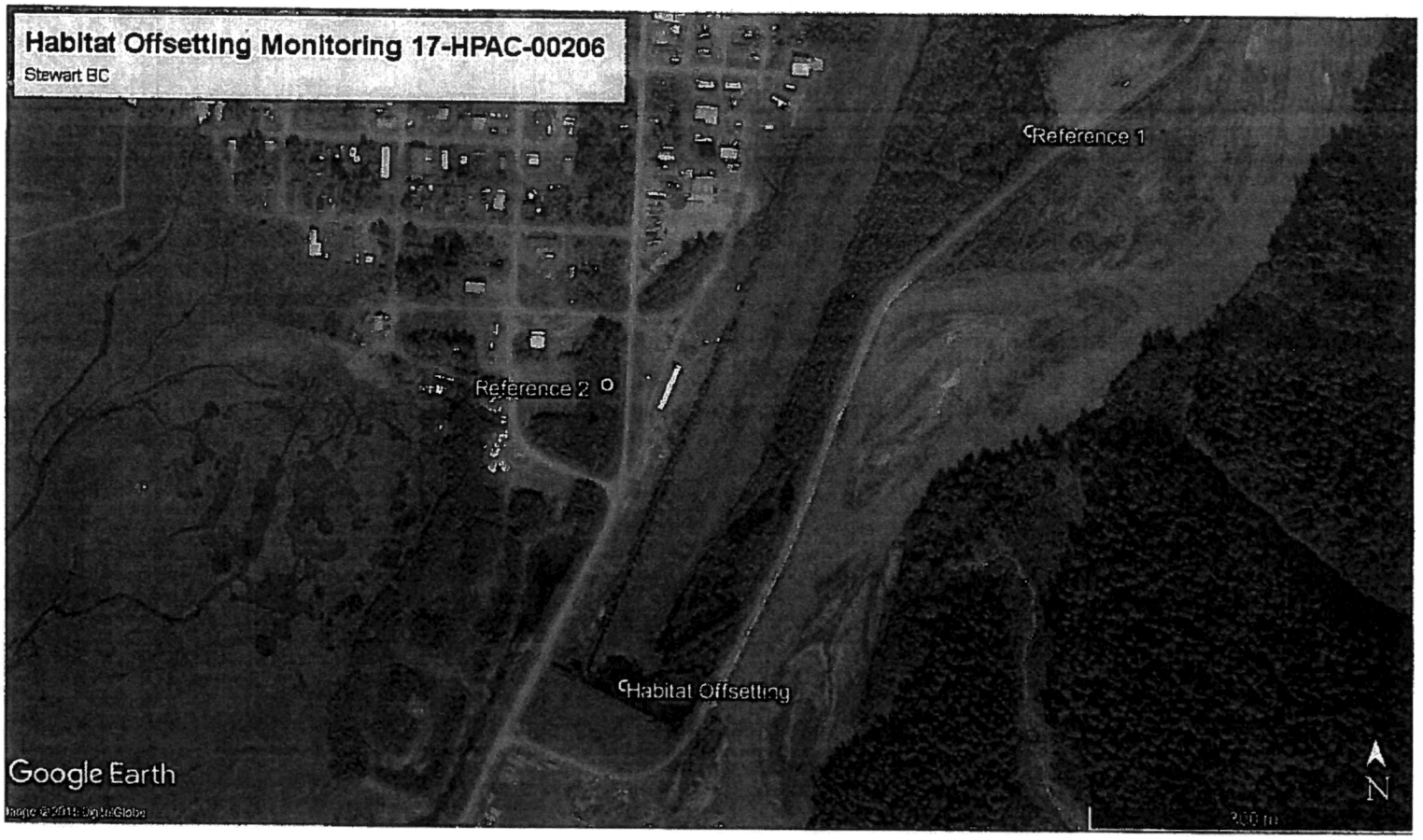

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s.19(1)

From: Wheeldon, Chera
To: [redacted]
Cc: Wheeldon, Chera
Subject: ISSUED LICENCE-NSLIS - XR 271 2019 - Keystone Environmental Ltd
Date: August-02-19 4:03:44 PM
Attachments: licence 485898 XR.pdf

Good afternoon Shane,

Please see the attached issued licence XR 271 2019 as per your application. Please review the terms and codnitions as they may have changed, always contact the nearest DFO office before and after works.

Thanks:)

Cheers,

Chera Wheeldon
Administrative Assistant/ Administrateur Fisheries and Oceans Canada | Pêches et Océans Canada North Coast Area | Secteur de la Côte Nord PO Box 578, 3177 Tatlow Rd, Smithers, BC, V0J 2N0 Telephone | Téléphone: (250) 847-6124 Facsimile | Télécopieur: (250) 847-4723 Government of Canada | Gouvernement du Canada
Chera.Wheeldon@dfo-mpo.gc.ca

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Fisheries and Oceans Canada | Pêches et Océans Canada

Licence Number: XR 271 2019
Valid From: 12-Aug-2019
Expiry Date: 11-Aug-2020

This licence and/or permit is issued under the authority of SECTION 52 OF THE FISHERY (GENERAL) REGULATIONS.

This licence and/or permit authorizes the person(s) listed below, subject to the following terms and conditions, to collect the species and quantity of fish identified below for: Scientific purposes. Non-compliance with any condition of this licence and/or permit may result in the cancellation of this licence and/or permit.

Licence/Permit Activity Description:
NON-RETENTION ONLY
Stewart World Port constructed an avalanche shield at their facility at the south end of Main Street in Stewart, BC (Authorization 17-HPAC-00206). The authorization was submitted by Stewart World Port and were reviewed by Nisga'a First Nations during the Authorization approval process. Keystone Environmental has been retained by Stewart World Port to complete the year 1 effectiveness monitoring for the habitat offsetting for authorization 17-HPAC-00206. Fish sampling will take place in the offsetting habitat as well as at two reference locations. The first location is located upstream of the offsetting (55°56'6.96"N, 129°58'45.75"W) and the second is on a nearby watercourse (55°55'56.55"N, 129°59'14.16"W).

Licence Holder:
FIN: [redacted]
320-4400 DOMINION ST.
BURNABY BC V5G 4G3

KEYSTONE ENVIRONMENTAL LTD

Contact Number: 604-430-0671
Fax Number: 604-430-0672

Contact Party:
FIN: [redacted] BYRNE, SHANE [redacted] Contact Number: [redacted]

Individuals or groups assisting with the authorized activity:

Keystone Environmental employees that may complete fish sampling include [redacted] Shane Byrne, [redacted]

Species, Quantity of Fish, Area(s) and Gear:

Species:	*SALMONIDS (Salmonidae)*
Gear:	Trap, Gee/Minnow Dip Net Seine Net
Licence Area:	Bear River Estuary, Stewart BC.
To be Retained:	0

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Additional Descriptions: The location of the habitat offsetting is at the southeast corner of the Stewart airport (i.e., Parcel C; 55°55'45.64"N, 129°59'12.64"W). The area is a extension of habitat offsetting that was completed under authorizations 12-HPAC-PA4-00248 and 16-HPAC-00732. Fish sampling will take place in the offsetting habitat as well as at two reference locations. The first location is located upstream of the offsetting (55°56'6.98"N, 129°58'45.75"W) and the second is on a nearby watercourse (55°55'56.55"N, 129°59'14.16"W).

Reporting Requirements:

XR 271 2019 — **Due Date 12-Sep-20**

Terms and Conditions:

Copies of this licence must accompany the collecting personnel, be on board any collecting vessel and be carried by the transport vehicle at all times during collection and transport of samples. The licence must be produced upon the request of a Fishery Officer or Guardian.

This licence authorizes collections to be made by the licensee and employees, volunteers and students of the licensee provided that all persons, other than minors who are engaged in activities under the authority of this licence, are carrying suitable photo identification to be produced upon request of any Fishery Officer or Fishery Guardian.

A breach of licence conditions is a Fisheries Act offence.

This licence may be amended or revoked by the Department prior to the expiry date if deemed necessary.

Prior to sampling and upon completion of any fishing activities the local Fishery Officers of the Department of Fisheries and Oceans must be informed of the exact time, location, purpose and samplers. All fish mortalities resulting from sampling activities must be reported.

Electrofishing is not permitted in the vicinity of spawning salmon or redds. Electrofishing can be severely damaging to eggs and alevins and must be avoided where eggs and alevins may be present. A trained and certified electrofisher operator must be a part of the electrofishing crew. Electroshocking will be avoided in water with a temperature below 5 degrees Celsius. Where this is not possible, all other methods of fish capture will be used prior to electroshocking. Electroshocking is authorized as a last method of collection for salvage purposes only. All fish must be returned to the water unharmed if possible.

It is the responsibility of the licence holder to ensure that samplers are experienced and competent in the fish collection methods authorized in this licence.

All gear left unattended must be clearly labelled with the Licence Number and must not interfere with the public right of navigation.

Release of fish: All non-target fish must be released unharmed into the water body or course from which they originated and as near as possible to the location from which they were captured.

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s.19(1)

Fisheries and Oceans Canada | Pêches et Océans Canada

Licence Number: XR 271 2019
Valid From: 12-Aug-2019
Expiry Date: 11-Aug-2020

No specimens may be retained.

This licence requires submission of a final report which is to be sent electronically to DFO.NCSP-PSCN.MPO@dfo-mpo.gc.ca. Refer to the reporting requirements on this licence for due date.

Please refer to the scientific licence number when submitting report.

Reporting Requirements

A written report describing dates of collection, location, DFO statistical management area and subarea, latitude and longitude, scientific name, common name and numbers of organisms or weight in kg. if numbers is an inappropriate measure, is required to be submitted to DFO within 30 days following expiration of this licence.

Section 32 (1) of the federal Species at Risk Act prohibits killing, harming, harassing, capturing or taking an individual of a wildlife species which is listed on Schedule 1 as an extirpated species, an endangered species or a threatened species. Refer to the SARA Public Registry at http://www.sararegistry.gc.ca to determine if species at risk may be in your research area and to apply for a permit if required.

Contact the BC Ministry of Forests, Lands, Natural Resources and Rural Development for a licence to collect non-salmon species.

By signing on this document, the person(s) listed below, agree to be bound by the terms and conditions that pertain to each person as an individual and to the group as a whole.

FIN	Licence Holder - Print Name	Signature	Date

Licence Printed: 02 August 2019
Licence Issued By: Not Issued.
Licence Prepared By: Amber Stuart

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s.19(1)

From: Wheeldon, Chera
To:
Cc: Wheeldon, Chera
Subject: ISSUED LICENCE-NSLIS - XR 271 2019 - Keystone Environmental Ltd
Date: August-07-19 10:10:45 AM
Attachments: licence_485898_XR.pdf

Hi Shane,

Please see the attahced issued licence watermark removed. System must have glitched when sending, thank you for catching that.

Please see the attached issued licence XR 271 2019 as per your application. Please review the terms and codnitions as they may have changed, always contact the nearest DFO office before and after works.

Cheers,
Chera Wheeldon
Administrative Assistant/ Administrateur Fisheries and Oceans Canada | Pêches et Océans Canada North Coast Area | Secteur de la Côte Nord PO Box 578, 3177 Tatlow Rd, Smithers, BC, V0J 2N0 Telephone | Téléphone: (250) 847-6124 Facsimile | Télécopieur: (250) 847-4723 Government of Canada | Gouvernement du Canada
Chera.Wheeldon@dfo-mpo.gc.ca

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From: Mercer, Vance
Sent: Friday, September 13, 2019 12:38 PM
To: 'bpettit@stewartworldport.com'
Subject: RE: Fisheries Act Authorization: 17-HPAC-00206 Offset monitoring

Great. I'll contact you closer to the date.

Vance

From: bpettit@stewartworldport.com <bpettit@stewartworldport.com>
Sent: Friday, September 13, 2019 12:07 PM
To: Mercer, Vance <Vance.Mercer@dfo-mpo.gc.ca>
Subject: RE: Fisheries Act Authorization: 17-HPAC-00206 Offset monitoring

That sounds great. I will be there for sure.

See you then

Brad

From: Mercer, Vance <Vance.Mercer@dfo-mpo.gc.ca>
Sent: September 13, 2019 12:03 PM
To: bpettit@stewartworldport.com
Subject: RE: Fisheries Act Authorization: 17-HPAC-00206 Offset monitoring

Hey Brad,

I'll be in Stewart the night of the 26th and heading back to Terrace the afternoon of the 27th. It would be good to connect.

Vance

From: Mercer, Vance
Sent: Thursday, September 12, 2019 8:11 AM
To: 'bpettit@stewartworldport.com' <bpettit@stewartworldport.com>
Subject: RE: Fisheries Act Authorization: 17-HPAC-00206 Offset monitoring

Great. Thanks Brad.

It sounds like the dates may match up. I'll keep you posted on our travel plans.

Vance

From: bpettit@stewartworldport.com <bpettit@stewartworldport.com>
Sent: Wednesday, September 11, 2019 4:41 PM
To: Mercer, Vance <Vance.Mercer@dfo-mpo.gc.ca>
Subject: RE: Fisheries Act Authorization: 17-HPAC-00206 Offset monitoring

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Hello Vance,

I will be up in Stewart the afternoon of Sept 26th for at least 10 days. We will be busy with a pipe shipment but it would be good if you could come while I am there. Let me know. I have attached the Aquatic Effects Assessment. It is a large file so I hope you get it. I am quite sure it is the full version.

Talk soon

Brad Pettit
President and Director
Stewart World Port
Mobile 250-961-0215
Field Office 250-636-2228
bpettit@stewartworldport.com
www.stewartworldport.com

From: Mercer, Vance <Vance.Mercer@dfo-mpo.gc.ca>
Sent: September 10, 2019 8:37 AM
To: bpettit@stewartworldport.com
Subject: RE: Fisheries Act Authorization: 17-HPAC-00206 Offset monitoring

Good morning Brad,

I hope you had a great summer. I'm currently thinking that I may come up to Stewart later this month to do a site visit on the Parcel C Offset and the Salt marsh associated with DFO File # 12-HPAC-PA4-00024. I'm not sure of the exact dates, but will firm them up in the next week or so.

In addition, I was recently doing an audit of all the current Stewart file folders and noticed that we are missing a few pages of a report. The Aquatic Effects Assessment (Barge Ramp Relocation Project) Report prepared by Balanced Environmental is missing section 7. It appears to be a scan of the original file and not all pages were scanned at the time. Would you be able to provide me with a PDF version of the complete report or direct me to someone you can?

Best regards,

Vance Mercer (B.Sc., R.P.Bio.)

Senior Biologist, Fish and Fish Habitat Protection Program
Fisheries and Oceans Canada/Government of Canada
Vance.Mercer@dfo-mpo.gc.ca / Tel: 604-666-2427 / Cell: 778-836-2471

Biologiste principal, Programme de protection du poisson et de son habitat
Pêches et Océans Canada/Gouvernement du Canada
Vance.Mercer@dfo-mpo.gc.ca / Tel: 604-666-2427 / Cell: 778-836-2471

Projects Near Water website:
http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html

From: bpettit@stewartworldport.com <bpettit@stewartworldport.com>
Sent: Tuesday, December 4, 2018 7:08 AM
To: Mercer, Vance <Vance.Mercer@dfo-mpo.gc.ca>

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Cc: Barber, Boone <Boone.Barber@dfo-mpo.gc.ca>; Ted Pickell <tp@arctic-const.ca>
Subject: Fisheries Act Authorization: 17-HPAC-00206 Offset Construction Schedule

Good morning Vance,

I just want to update you on the progress of our fish offset construction. It is going very well and we are anticipating completion by end of day tomorrow. Our on-site professional has kept very good daily records and these will be included in the post construction report. Feel free to contact me if you need anything else.

Best Regards

Brad Pettit
President and Director
Stewart World Port
Mobile 250-961-0215
Field Office 250-636-2228
bpettit@stewartworldport.com
www.stewartworldport.com